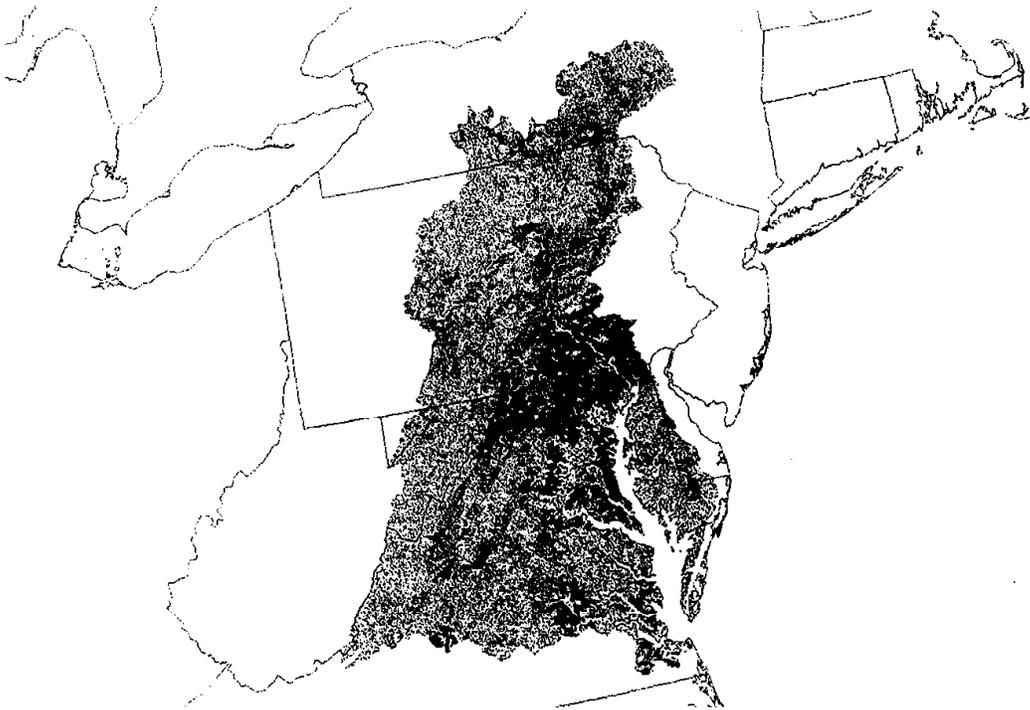


# The Potential for Nutrient Loadings from Septic Systems to Ground and Surface Water Resources and the Chesapeake Bay



*A Cooperative Project between*

Environmental Protection Agency Chesapeake Bay Program  
Chesapeake Research Consortium, Inc.  
NCRI Chesapeake, Inc.  
USDA/NRCS-Northeast National Technical Center

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**The Potential for Nutrient Loadings from Septic Systems  
to Ground and Surface Water Resources  
and the Chesapeake Bay**

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On the Cover:  
Map of septic system densities in the  
Chesapeake Bay Watershed

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# THE POTENTIAL FOR NUTRIENT LOADINGS FROM SEPTIC SYSTEMS TO GROUND AND SURFACE WATER RESOURCES AND THE CHESAPEAKE BAY

## EXECUTIVE SUMMARY

In cooperation with the Chesapeake Research Consortium (CRC) and the U.S. Environmental Protection Agency Chesapeake Bay Program Office (CBPO), NCRI Chesapeake, Inc., with assistance from the Northeast National Technical Center of the USDA/Natural Resources Conservation Service, studied population and physical data of the Chesapeake watershed to determine the potential contribution of nitrogen loadings from septic systems to contaminate ground water, surface water and the bay.

The goal of reducing nutrients (nitrogen and phosphorus) by 40% in the Chesapeake Bay by the year 2000, from levels existing in 1985, requires an accurate assessment of specific sources of nutrient loadings to ground water, surface water and the bay. Relative contributions from various source inputs will vary by watershed and depend upon population, land use, climate, hydrologic conditions and physiography.

Four new technical approaches were used in developing a GIS-based system to link population data to three housing types (urban, rural, farm) and three means of waste disposal (septic, sewer, other means of waste disposal): 1) 1990 Census Block Group data was used to estimate populations by housing type and waste disposal means; 2) STATSGO, karst and geologic data was used to characterize soils by septic limitations; 3) physiographic data was used to describe regions where soils are potentially vulnerable to ground and surface water contamination; and 4) an hierarchical approach aggregating the block group/STATSGO intersections to county, model segment, state and entire watershed areas was used to spatially account for associated resource effects of human populations in the environment.

*Population.* There are 5,292,582 occupied housing units in the watershed, reported by the U.S. Department of Commerce Bureau of Census. Of these, 70.9% are classified by the Census as urban, 26.4% as rural and 0.6% as farm type housing units. Maryland and Virginia have the highest number of housing units in the watershed (1.73 and 1.74 million respectively) and Pennsylvania has 1.24 million. Twenty-five percent of the housing units depend upon septic systems or other means of non-sewered waste disposal. The average number of persons per household in the watershed is 2.6. The average number of persons per household depending upon septic and other means of waste disposal in the watershed is 2.8. However, in Pennsylvania the average number of persons per housing unit depending on septic and other means of waste disposal is 3.1.

*Nitrogen Loading Rate.* The edge-of-drainfield load range provided by the CBPO was used as the nitrogen source loading rate (7.7 - 11.0 lbs/capita/year). From the minimum and maximum population estimates and minimum and maximum per capita annual loading rates, the mean value of 4,240.36 grams/capita/year (9.35 lbs/capita/year) was used to calculate the average per capita load. In this particular study, no provisions for transport or chemical modifications through denitrification or oxidation/reduction was applied to the source loading.

*Soils Potential for Nitrogen Loading.* On an average composition-weighted basis, soils in the watershed overall have a 75% potential for ground water contamination from septic field effluent. The total amount of nitrogen loaded to the watershed ranges from a minimum of 22.41 million lbs/yr, through a mean of 33.47 lbs/yr and a maximum of 47.78 million lbs/yr. Seventy-one percent is loaded to ground water, 26.2% is loaded to surface water and 2.9% is loaded directly to the bay through Census blocks overlaying a 1,000 foot buffer along the bay shoreline. Urban housing units on septic systems load one-third of this nitrogen class.

*Nitrogen Loadings Directly to Ground Water, Surface Water and the Bay.* Pennsylvania, because of its higher percentage of septic-dependent housing units and its higher ratio of persons per household, ranks first among the states with a total mean loading of 11.19 million pounds (33.4% of the total) of nitrogen per year to the watershed. Virginia ranks second with 9.56 million pounds (28.6% of the total) and Maryland is third with 8.35 million pounds or 24.9% of the total load. The same rank order applies among the states for nitrogen partitioned to ground water and surface water. Maryland leads the states in nitrogen loaded *directly* to the bay generating 586,842 lbs. (61% of the total loaded to the bay) and Virginia is second with 38% of the total loaded to the bay. Some of the smallest model segments receive the highest rates of nitrogen loading and they often directly associated with the Bay. For example, the Coast 6c segment of the west Chesapeake sub-basin receives an average of 8.65 pounds per model segment acre, the Severn River in Maryland receives 6.51 pounds per acre and the Coast 5 segment of the Patuxent receives 3.21 lbs per acre.

*Statistical Methods and Analysis.* A method for modeling populations and housing statistics using Public Use Microdata Sample (PUMS) provided certain data not available at the Census block level. Statistical methods were used to link population data to housing types *and* waste disposal means. The reliability of this approach is discussed at length in the "Methods" section of the report. In addition to absolute amounts of nitrogen loaded, concentrations and locations of these sources within a watershed are critical in determining the effects of septic fields on water resources. Because no transport or chemical modification was applied to the source loadings, further work is need to estimate these effects.

*Recommendations.* Several recommendations for extending this type of study include: 1) provide a comprehensive spatial allocation of all nutrient source loadings to the watershed and the bay; 2) integrate source loadings with water resources to determine direct and off-site impacts of septic effluent; 3) develop a water use budget for the watershed using economic analysis of populations and waste disposal means to identify communities needing economic and feasible disposal alternatives; 4) estimate growth patterns and the potential pollution impacts of land conversion for use in tributary and development strategies; and 5) identify the socio-economic characteristics of communities in the watershed in an effort to better coordinate, design and package conservation assistance on state and regional levels.

## INTRODUCTION AND BACKGROUND

In spite of an extensive national scale ground water cleanup program, significant and increasing levels of ground water contamination have been documented in the last few years in the United States. Ground water contamination can result from a number of sources including industrial and commercial land uses, agricultural practices associated with cropland and animal waste disposal, home lawn care, non-sewered housing units, atmospheric deposition and other sources.<sup>1</sup> Among these, septic tanks and cesspools rank second only to industrial uses as the largest source of ground water contaminants.<sup>2</sup>

Nitrates in ground water from septic field effluent is, in fact, the most frequently reported cause of ground water contamination.<sup>3,4</sup> In addition, septic fields are the source of the largest volumetric amount of effluent (3.8 billion cubic meters or one-third of the nation's domestic waste water<sup>3</sup>) to the ground water zone.<sup>4,5</sup>

The Environmental Protection Agency estimates that one-quarter of the nation's population depends upon on-site septic systems for sewage treatment.<sup>4</sup>

### Nutrient Reduction Goals in the Chesapeake Watershed and Nitrogen Source Loadings

*In January 1994, the Nutrient Subcommittee of the Chesapeake Bay Program issued a Request for Proposal to document:*

*The amount of nitrogen loading in pounds to:*

- *surface water,*
- *ground water and*
- *directly to the coastal zone from septic fields by Census Block Group.*

*Data were to be aggregated by*

- *county,*
- *EPA's Model Segments and by*
- *state and summarized for*
- *the entire watershed.*
- *A literature search was also requested.*

The goal of reducing nutrients (nitrogen and phosphorus) entering the Chesapeake Bay from levels existing in 1985 by 40% by the year 2000 requires an accurate assessment of specific sources of nutrient loadings to ground water, surface water and the coastal zone.

Comprehensive, quantitative studies of major nutrient sources such as septic field effluent relative to other point and nonpoint sources as associated with water quality in a single watershed are extremely limited in number. This is in part because field testing of effluent in large watersheds over time is a major undertaking. In one such study, however, researchers were able to prioritize varied land uses including agricultural and non-agricultural uses with respect to nitrogen leaching in a small watershed in Rhode Island. A conventional septic system and all silage corn treatments tested produced the highest annual flow-weighted nitrate-N concentrations (in excess of 10 mg/l) for at least 1 of the 2 years of the study. In contrast, forest and home lawn treatments generated lowest flow-weighted nitrate-N rates (<1.7 mg/l).<sup>5</sup> For this watershed at least, a priority to address certain

agricultural uses (silage corn systems) and non-agricultural uses (septic fields) -- all other factors being equal -- might yield a higher rate of nutrient reduction for the effort expended.

Relative contributions from various source inputs will vary by watershed and depend upon population, land use, climate, hydrologic conditions, and physiography.<sup>6</sup> Associating source inputs with water quality assessments in watersheds where source inputs are mixed is complicated. Nevertheless, assessing the environmental potential at the source seems to be a tenable starting point providing there is a scientific basis for these estimations.

\* For the purposes of this report the 'Coastal Zone' refers to the 1,000 ft. shoreline buffer area adjacent to the Chesapeake Bay. The coastal zone shoreline measures 5,428.51 linear miles and includes tributary shorelines greater than 355 feet of shore separation. Tributary shoreline separation of less than 355 feet were not included in the calculation. The coastal zone area in Maryland is known as the 'Critical Area.'

A comprehensive assessment to address the level of *source loadings* for all principal land uses would be useful to the nutrient reduction strategy. Indeed, the Chesapeake Bay Program (CBP) has sponsored extensive analyses of nitrogen loadings from the 23.46 million acres of forestland, for instance, which represent 66% of the land cover in the Chesapeake watershed.<sup>7</sup>

*The term 'source loadings' as used here and in other studies refers to loadings at the edge of the drain field (rather than those entering the tank). Reduction of soluble nitrogen through transport, management and natural factors that cause subsequent denitrification, vaporization and chemical modification are not accounted for in this study.*

## **The Role of Septic Effluent in Nitrogen Loadings to Ground and Surface Water and the Coastal Zone**

Estimates of the role of septic fields in contributing to nutrient levels in the coastal zone to date, vary greatly. While one researcher estimates that 30% of the nitrogen in Maryland ground water comes from septic systems,<sup>8</sup> others have tended to minimize septic fields as a major source within the basin. While census data show that there are approximately 424,000 septic systems statewide in Maryland, 650,000 in Virginia and approximately 1.5 million in Pennsylvania, exactly how many of these are within the Chesapeake watershed was not known until now. Extensive areas of low-density residential uses, suggest that septic use is geographically wide-spread in the watershed. According to Thematic Mapper imagery developed by EPA for 1990, high density urban development covered 271,220 acres in the watershed and low density development covered 1,768,689 acres in 1990.<sup>9</sup> Earlier aerial photography (1972-1984) developed by the U.S. Geological Survey estimated urban lands to cover a larger area (2.546 million acres) of the watershed, of which, 1.887 million acres was residential, mixed and other urban built-up land.<sup>10</sup> Another source of data, the U.S. Census Bureau's TIGER files including Census' geographies (Blocks, Block Groups and Tracts), provides a suitable graphic base for distribution of household and population statistics together with their impacts on the watershed.

## **Technical Approach**

### *Source Loads*

Calculations of source nitrogen loadings from septic fields requires information about the number of housing units using septic fields and other non-sewered means of waste disposal in the watershed. For this, an accurate count of persons per housing unit is needed. It was also determined that the number of people per housing unit type as urban, rural or farm types using septic and other non-sewered systems would be required.

Population statistics by housing type and means of waste disposal were allocated to 12,388 Census block groups in the watershed. Nitrogen loadings from septic and other means of disposal were calculated for each block group by population correlated with household type, and distributed on an areal basis to land areas through intersections of the block groups with soils/geology and surface water bodies.

### *Potentials for Surface and Ground Water*

An estimate of loadings to surface and/or ground water requires linking nitrogen loads from population and housing data to those physiographic layers (soils and geology) which may influence the primary direction (downward or laterally) of such loadings to ground water and/or surface water and the coastal zone. It was decided that STATSGO (State Soils Geographic Data Layer) from NRCS/USDA as the one consistent and available source of soils information was most appropriate to estimate soils potential influences upon septic effluent. Soils -- characterized by their composition of limitations for septic field operation -- were used to determine the initial partitioning of nitrogen toward ground water or surface water *from the base of the septic field*. Source nitrogen loadings were aggregated and reported by county, state, and CBP Model Segment units. *No attempt was made to account for physical, chemical or*

biological processes which could reduce the final edge-of-field level of nitrogen level used to estimate nitrogen loads delivered by model segments to the coastal zone.

It is hoped that this study contributes materially to a better understanding of this important source of nitrogen loading to the water resources of the Chesapeake drainage and its coastal zone.

## METHODS

### Estimating Selected Social and Economic Characteristics of Housing Units and Persons Classified by Means of Sewage Disposal at the Census Block Group Level of Geography

*This report integrates cultural and physical data layers heretofore not available to:*

- (1) *classify housing units (HUs) as urban, rural or farm types by means of waste disposal (sewer, septic fields and other means);*
- (2) *document the number of persons per housing unit by HU type;*
- (3) *calculate ranges for estimated nitrogen loading levels (minimum, maximum and mean) for each block group. Based on the rates of nitrogen loadings at the base of the septic field by HU type and number of persons per HU using septic or other means of waste disposal;*
- (4) *associate this load at the Census Block Group level with soils and geologic data;*
- (5) *estimate load partitioning from the base of the septic field to ground and surface water;*
- (6) *determine nitrogen loadings directly to the coastal zone from block groups partially overlaying and/or wholly contained within the 1,000 shoreline buffer area surrounding the coastal zone.*

An estimate of nitrogen loadings from septic and other non-sewered means of waste disposal requires at a minimum, not only knowledge about the *number of housing units* connected to these systems, but also data about the *number of persons per housing unit*. Furthermore, it was believed that population densities per housing unit (and thus nitrogen loads) would vary according to housing unit types as urban, rural and farm types, as well as from one county to another.

The 1990 Census of Population and Housing questionnaire included the following item requesting information about sewage disposal from the housing unit head (or from an enumerator if the dwelling unit was vacant):

H16. *Is this building connected to a public sewer?*

Yes, connected to a public sewer.

No, connected to septic tank or cesspool.

No, use other means of sewage disposal [chemical toilet, outhouse, etc.].

#### *The Public Use Microdata Sample (PUMS)*

In estimating the number of persons within each sewage disposal category, the overall mean number of persons per housing unit for a given block group could be used to weight the number of total housing units in each category in order to calculate the approximate number of persons included in that category. Such an estimate would not however, take into account the correlation between means of sewage disposal and housing unit size (the "interaction" between these two variables).

To assess the effect of this interaction and arrive at a more accurate estimate of the distribution of population by sewage disposal category, a special tabulation of means of sewage disposal by number of

\* Geographic block groups are clusters of blocks, within the same census tract or Block Number Area, having the same first digit of their 3-digit block numbers; for example, blocks 101, 102, 103, ..., 199 in census tract 1210.02 belong to BG 1. Block groups never cross county or census tract/BNA boundaries, but may cross the boundaries of county subdivisions, places, and Urbanized Areas. Block groups generally contain between 250 and 550 housing units. Each block group usually covers a contiguous area. Each census tract/BNA contains at least one block group. Block groups are uniquely numbered within census tract/BNAs.

persons in housing unit was performed using the Public Use Microdata Sample (PUMS)<sup>\*</sup> of the individual records gathered in the 1990 Census of Population and Housing.

One-hundred-and-twenty-eight Public Unit Microsample Areas (PUMA's) intersect the seven state Chesapeake Bay watershed area. Of these, seven PUMA's were eliminated as having some land area but no significant population in the watershed. The remaining one-hundred-and-twenty-one PUMA's contain about eight-million housing units and nineteen-million persons — larger than the actual watershed population of about six-million housing units and fourteen-million persons, but representing it well statistically.

PUMA's which touch, cross, or are entirely contained within the Chesapeake watershed are shown in *Figure A*. Of the 128 PUMA's which are associated with the watershed boundary, 122 contribute more than 1% of their area to the watershed.

The relationship between the means of waste disposal to the number of persons per housing unit is shown in *Table A*. By tabulating the roughly 400,000 housing unit records within these 121 PUMAs, a sizable difference in the proportion of single person housing units between sewer and septic systems can be shown.

By weighting the count of occupied housing units by the number of persons per housing unit and summing the result, an estimate of the number of persons in each category of sewage disposal can be estimated (*Table B*).

When calculated at the PUMA level, housing units with septic and other non-sewered disposal have significantly more members on the average than those with sewer connection. Use of the grand mean of 2.6 persons per housing unit would, in essence, overestimate the number of persons on sewer by about 3.0% and underestimate the number of persons on septic by 8.0% and on other means by 6.5%.

In order to more fully account for this source of variation in persons per housing unit, the PUMS' records were used to characterize individuals by their urban/rural and farm/nonfarm residence.<sup>†</sup>

*The Tabulations of the 1990 Census provided only counts of total housing units in block groups together with means of waste disposal. The primary purpose of the task described here was to provide estimates of the universe of persons in the occupied housing units for each of the three waste disposal categories summarized to the geographic level of census block group. Block groups are small areas made up of city blocks or rural road segments containing an average of 350 housing units or about 1,000 persons each.*

<sup>\*</sup> note: Among the 1990 PUMS files prepared by the Census Bureau, the most comprehensive contains individual level data for five percent of the United States — over five-million housing unit and thirteen-million person records. In order to protect the privacy of individuals on these files, address information is limited to a geographic code identifying an area containing no fewer than 100,000 persons. These areas, called Public Use Microdata Areas (PUMA's) are made up of one or more counties in sparsely populated regions and combinations of census tracts and places making up parts of counties in densely populated locations.

<sup>†</sup> note: The classification by the Census Bureau of place of residence into urban and rural follows the following rules: "...An 'Urbanized Area' comprises one or more places and the adjacent densely settled surrounding territory (urban fringe) that together have a minimum of 50,000 persons. The urban fringe generally consists of contiguous territory having a population density of at least 1,000 persons per square mile, but may also include similarly populated outlying territory that is within a specified number of miles from the boundary of the core [central city] of the Urbanized Area. An 'Urban Area' comprises all territory, population and housing units in urbanized areas and in non-urbanized places of 2,500 or more persons. Territory population and housing units not classified as urban are constituted as 'rural.' Rural population and housing units are subdivided into 'rural farm' and 'rural nonfarm.' 'Rural farm' includes all rural housing units and housing units on farms of over one acre from which \$1,000 or more of agricultural products were sold in 1989; the remaining rural population and housing units are termed 'rural nonfarm.'" (1990 Census of Population and Housing, "Guide, Part A.", pages 58 and 61.)

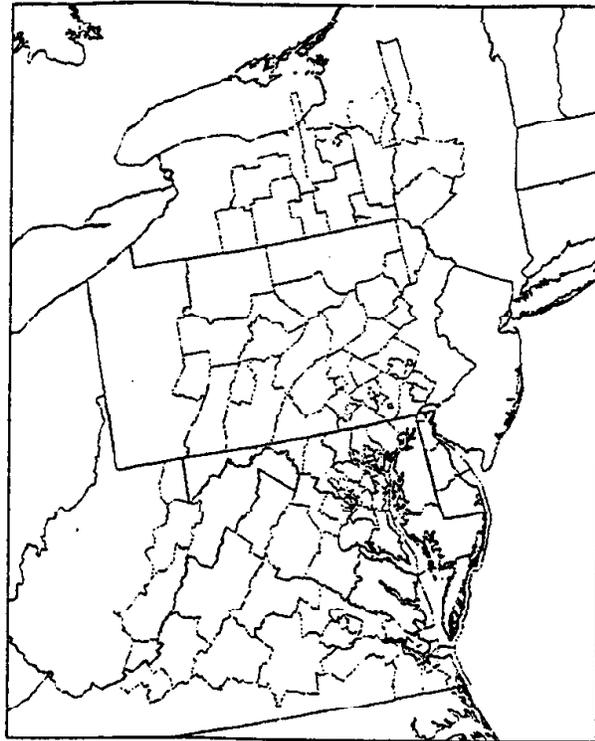


Figure A  
Public Use Microsample Area boundaries which touch or cross or are entirely within the Chesapeake Bay Watershed outer boundary

| PERSONS IN HOUSING UNIT | MEANS OF DISPOSAL |                |                | AVERAGE        |
|-------------------------|-------------------|----------------|----------------|----------------|
|                         | SEWER             | SEPTIC         | OTHER          |                |
| 1 person                | 26.90%            | 16.33%         | 25.89%         | 23.94%         |
| 2 persons               | 31.73%            | 33.56%         | 27.63%         | 32.18%         |
| 3 persons               | 17.96%            | 20.07%         | 17.93%         | 18.55%         |
| 4 persons               | 14.39%            | 18.50%         | 14.10%         | 15.53%         |
| 5 persons               | 5.95%             | 7.79%          | 7.82%          | 6.48%          |
| 6 persons               | 1.96%             | 2.41%          | 3.59%          | 2.11%          |
| 7+ persons              | 1.12%             | 1.34%          | 3.04%          | 1.20%          |
| <b>TOTAL</b>            | <b>100.00%</b>    | <b>100.00%</b> | <b>100.00%</b> | <b>100.00%</b> |

Table A.  
Occupied Housing Units and Means of Disposal - 121 Chesapeake Bay Watershed PUMA's

| PERSONS IN HOUSING UNIT        | MEANS OF DISPOSAL |           |         | TOTAL      |
|--------------------------------|-------------------|-----------|---------|------------|
|                                | SEWER             | SEPTIC    | OTHER   |            |
| Occupied Housing Units         | 5,148,562         | 2,019,859 | 91,497  | 7,259,918  |
| Estimated Persons              | 12,968,024        | 5,685,119 | 253,139 | 18,906,282 |
| Estimated Persons/Housing unit | 2.52              | 2.81      | 2.77    | 2.60       |

Table B.  
Persons per Housing Unit and Means of Waste Disposal

Each housing unit in the PUMS was characterized as located in an urban, rural nonfarm or rural farm area, according to the above definitions. In addition, all housing units not characterized as Rural Farm were identified as occupied or vacant ("Farm" status applies only to occupied housing units, by definition). Together with the three sewage disposal categories, these items produced nine mutually exclusive categories for which counts of occupied housing units by persons per housing unit and other person-based items (such as income) were produced (*Table C*). An additional six categories for vacant housing units were used (for a total of fifteen categories) where the item was based solely on housing unit characteristics (such as source of water, etc.).

| Category | Vacancy  | Urban/Rural | Farm/Nonfarm | Sewage Disposal |
|----------|----------|-------------|--------------|-----------------|
| 1        | Occupied | Urban       | Nonfarm      | Sewer           |
| 2        | Vacant   | Urban       | Nonfarm      | Sewer           |
| 3        | Occupied | Rural       | Nonfarm      | Sewer           |
| 4        | Vacant   | Rural       | Nonfarm      | Sewer           |
| 5        | Occupied | Rural       | Farm         | Sewer           |
| 6        | Occupied | Urban       | Nonfarm      | Septic          |
| 7        | Vacant   | Urban       | Nonfarm      | Septic          |
| 8        | Occupied | Rural       | Nonfarm      | Septic          |
| 9        | Vacant   | Rural       | Nonfarm      | Septic          |
| 10       | Occupied | Rural       | Farm         | Septic          |
| 11       | Occupied | Urban       | Nonfarm      | Other           |
| 12       | Vacant   | Urban       | Nonfarm      | Other           |
| 13       | Occupied | Rural       | Nonfarm      | Other           |
| 14       | Vacant   | Rural       | Nonfarm      | Other           |
| 15       | Occupied | Rural       | Farm         | Other           |

Table C.  
Correlation of Vacancy Status with Housing Unit Type and Waste Disposal Means

The joint distribution of means of sewage disposal and number of persons per housing unit by vacancy status, rural/urban and farm/nonfarm as shown above were then generated for each of the 121 PUMA's in the Chesapeake watershed by cross-tabulation of the PUMS file of about 400,000 housing units extracted from these PUMA's. In addition, cross-tabulations of these fifteen categories by number of persons per housing unit and the seven independent variables listed above were computed for each PUMA. The average occupancy rate in 1990 was 92.5%. All farm housing units are occupied by definition. 93.5% and 88.18% of urban and rural housing units were occupied.

### *Translating PUMA statistics to the Block Group Level*

These PUMA tables were employed as models to estimate analogous tables for the block groups included within or allocated to their areas. (Block groups in PUMA's which had less than ten percent of their areas inside the Chesapeake Bay watershed were allocated to nearby PUMA's if the demography and physiography of these contiguous PUMA's was more like these block groups than the whole of their parent PUMA lying largely outside the watershed).

### *Estimating Housing Type, Vacancy Status and Waste Disposal Means at the Block Group Level*

The procedure for estimation of the inner cells of *Table C* at the block group level given the observed marginal (row and column) totals for each block group in the census summary data (the file designated STF3A) included the following steps:

- 1) Expected frequencies were calculated for the model table at the PUMA level. Where "k" is the PUMA index (ranging from 1 to 121), "i" is the row dimension and "j" the column dimension, " $E_{ijk}$ " is an expected joint frequency, " $F_{ik}$ " is a row marginal total, " $F_{jk}$ " is a column marginal total and " $N_k$ " is the total base of the table (number of occupied housing units in the PUMA):

$$E_{ijk} = (F_{ik} * F_{jk}) / N_k$$

- 2) Discrepancy ratios, " $d_{ijk}$ ", of the observed frequencies, " $f_{ijk}$ ", from the expected frequencies, " $E_{ijk}$ ", were calculated by:  
$$d_{ijk} = f_{ijk} / E_{ijk}$$
- 3) An initial approximation ( $h = 1$ ) to the joint frequencies for each block group (index b), " $f_{ijbh}$ ", is calculated by multiplying the discrepancy ratio of the including PUMA,  $d_{ijk}$ , by the block group's own expected frequencies,  $E_{ijb}$  derived from its observed STF3A marginal totals of housing units by means of sewage ( $F_{ib}$ ), rural/urban, farm/nonfarm and occupied/vacant ( $F_{jb}$ ). This approximation is computed by:

$$f_{ijb1} = (F_{ib} * F_{jb}) * d_{ijk} / N_b$$

- 4) A final estimate of the block group joint frequencies is calculated by iterative raking of the initial estimate (for  $h = 1$  to  $n$  iterations converging to a designated accuracy) such that the row and column sums of the estimated joint frequencies equal the observed block group row and column sums at the desired accuracy.

The resulting 45 data items constitute estimated counts of housing units for each of the approximately 12,400 block groups in the Chesapeake Bay watershed by fifteen categories of the means of sewage disposal, housing unit type, and occupied/vacant status. These counts form the marginal totals for estimation at the block group level of the relationship of means of sewage disposal in urban, rural nonfarm and rural farm housing units to the number of persons per housing unit as well as to seven characteristics of housing units thought to be useful in this study (Vacancy Status, Units in Structure, Source of Water, Year Structure Built, Plumbing Facilities, Housing Unit Income and Housing Unit Poverty Status).

The Boundaries of Census Block Groups is shown in *Figure B*.

Given STF3A block group marginal totals of counts of housing units (occupied housing units) by number of persons per housing unit, block group estimates of housing unit counts by nine categories of means of sewage and rural/urban, farm/nonfarm status and the PUMA level model cross-tabulation of these nine categories by persons per housing unit, estimates were formed of the inner cells of this cross-tabulation at the block group level by the iterative ranking method described above.

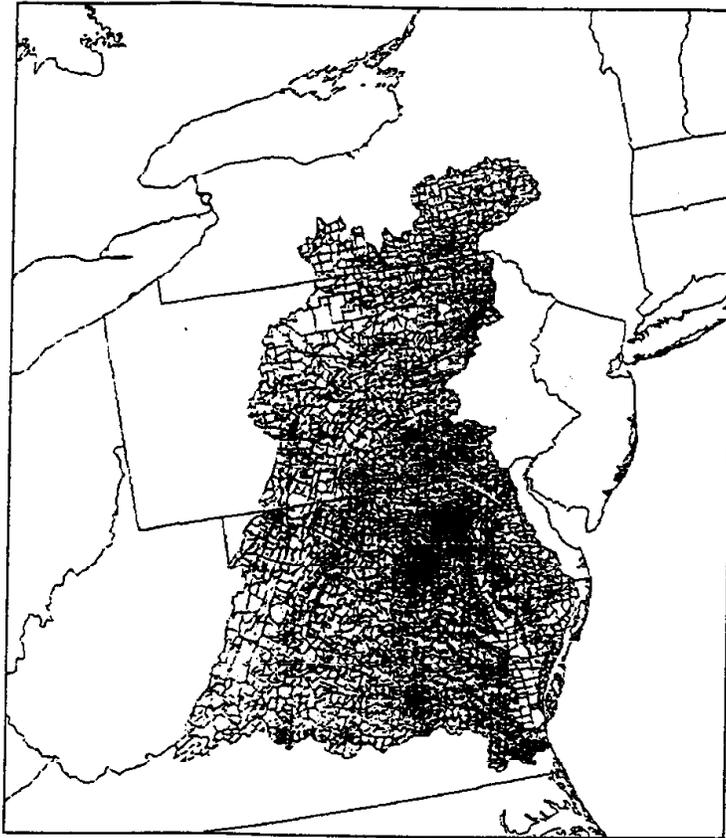


Figure B  
1990 Census Block Group Boundaries

#### *Estimating Population by Housing Type*

By weighting these estimated block group counts of occupied housing units by the number of persons per housing unit in each cell and summing the result is an estimate of the number of persons in each of the nine categories of sewage disposal; urban/rural, farm/nonfarm status was calculated for each block group. In addition, the average number of persons per housing unit was calculated for each of these nine categories for every block group.

Using PUMA level cross-tabulations of (1) means of sewage disposal, (2) rural/urban, (3) farm/nonfarm and (4) occupied/vacant status with the seven independent variables described above, estimates were made for each category for each block group. Observed block group level marginal totals from STF3A, and estimates of the distribution of housing units by means of sewage disposal and rural/urban, farm/nonfarm and occupied/vacant status were determined from the calculations described above.

#### *Accuracy of Population Estimates*

The 1990 Census of Population and Housing, Summary Tape File 3A (Census Block Group data) is based upon a roughly 1-in-6 sample enumeration.<sup>11</sup> This is subject to sampling errors arising from the

selection of persons and housing units to be included in the sample. In addition, the data are subject to nonsampling error introduced as a result of human error at the collection and/or recording stages.

In this study, population and number of housing units in each block group were taken from the STF3A data for the block group. The distribution of the data within the block group was modeled from PUMS data. The population counts and housing unit total counts are subject to sample and nonsample errors. These errors are dealt with as suggested in the STF3A documentation on data accuracy: the estimated standard error for each sample estimate total was calculated and then factored by a design factor for the characteristic in use (population or housing). The estimated and adjusted standard error was used to construct 95 percent confidence intervals about the estimate. These intervals form the range of population and housing unit totals within each block group.

### *Data Precision in Tables*

Most of the data presented here was derived from statistical estimates. Precision was carried for these estimates to the third decimal point. Numbers, however, are often shown as rounded upwards to the nearest whole number. Calculations using these numbers (e.g., persons per housing unit) were based on the highest precision values and this may differ from those expected from rounded whole numbers presented in Tables.

## **CENSUS BLOCK GEOGRAPHIES**

### **Differentiating Urban from Rural Influences in PUMA's and Block Groups Transected by the Outer Watershed Boundary**

Polygon boundaries such as the outer Chesapeake watershed boundaries which transect geographic units used in assessments always create concern about variability of composition in the transected polygon and consequent non-representational apportionment of transected polygon characteristics.

- a. *PUMA's and the outer watershed boundary.* Some 44 out of 128 PUMA's are transected by the outer watershed boundary. Urbanized areas outside the watershed could influence the profile of block groups within each PUMA that are inside the watershed. (See *Figure C*, for example). Two boundaries, (1) the outline of the Public Use Microsample Areas (PUMA's) in blue, and (2) the outline of the Chesapeake Bay watershed are shown in red. Red shading indicates Census designated Urbanized Areas\* or blocks.

### **Urbanized Areas, Block Group Boundaries and the Chesapeake Bay Watershed**

- b. *Block Groups, Urbanized Areas and the Outer Watershed Boundary.* An example of the intersection of Watershed and Census Block Group boundaries and Census designated urbanized areas (UA's) is shown in *Figure D*.

The red line is the outer boundary of the Chesapeake Bay watershed. Black lines outline individual census block groups. Green shading denotes census designated urbanized areas. Urbanized areas are flagged at the census block level. Blocks aggregate to block groups. An individual block within a

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\* note: See footnote, page 9.

block group could be flagged as a UA, while other blocks in the block group are not. The block pointed out is designated as a UA, while other blocks making up the block group are not.

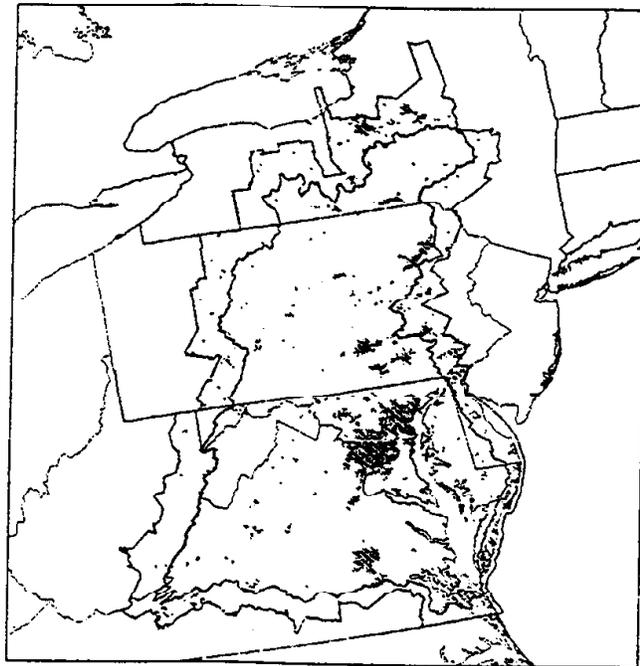


Figure C  
Urbanized Areas within PUMA Boundaries and in the Chesapeake Watershed

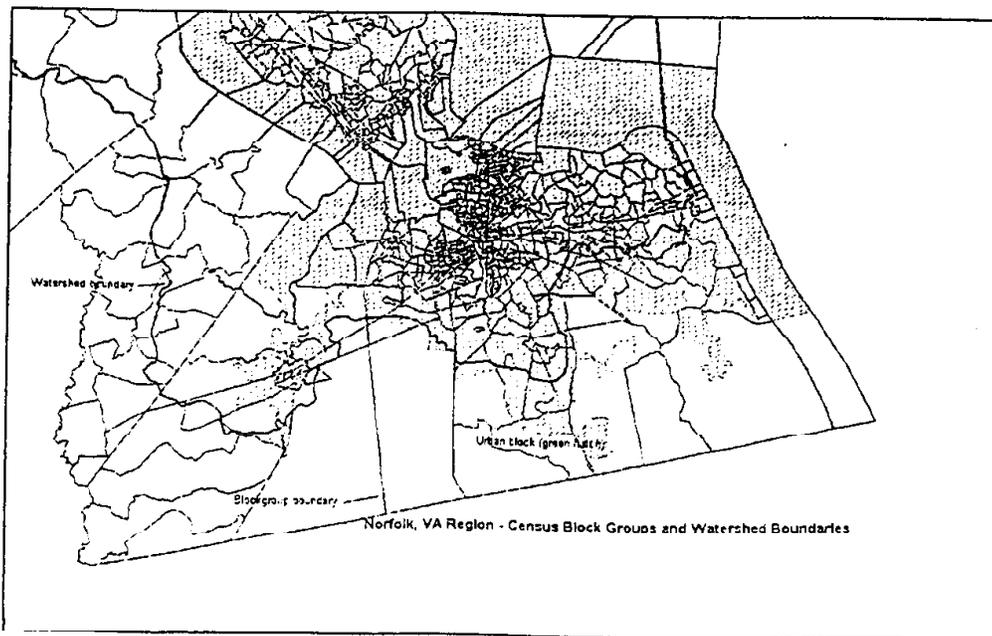


Figure D  
Urbanized Areas, Block Group Boundaries and the Chesapeake Bay Watershed

Examination of those block groups intersected by the watershed boundary showed that urban distribution at the block group level – inside and outside the watershed – was not significantly affected by the intersection with the outer watershed boundary. This validated the Block Group again as a satisfactory small area geographic discriminator for population type segregation.

#### **Accounting for Land-Based Septic Densities in Block Groups with Water Bodies**

There are 12,408 unique block groups in the watershed, to 12,388 of which can be allocated data from the 1990 census. Many Block Groups are entirely composed of land areas and many contain significant water areas. An example is shown in *Figure E*. In order to accurately spatially allocate housing to appropriate land areas, Census Block Groups were integrated with surface water bodies from TIGER files and surface water areas were deducted from the Census Block areas.

Every census block group polygon was tracked before and after the watershed boundary intersect, and areal data was tabulated for the entire watershed. Each block group which was not entirely within the watershed carried the percent of the *land* area of the original block group which remained within the watershed. This percentage was applied to all census of population and housing data.

#### ***Water Census Block Groups: Shorelines, Buffer Areas and Nitrogen Loadings to the Coastal Zone***

Three classes of Block Groups (BGs) were directly associated with water (see box insert):

Characteristics of BG's in (a) and (b) were incorporated into county summaries because they contained county identifiers. Because they could not be assigned to model segments, they were collected and grouped by the principal river system in which they were found for model segment summaries. Nitrogen loadings for these BG's were allocated directly to the 1,000 ft Critical Area buffer area in Maryland and CZMA's (1,000 ft shoreline buffers) for the other states together with other BG's wholly or partially contained within the 1,000 ft shoreline buffer area (water block groups).

#### *Water Block Groups:*

- (a) *Nine hundred seventy BG's containing 77,930 acres at least partially overlaid water areas – primarily along shorelines. These had been assigned FIPS codes by the Bureau of the Census and contained data for housing units, population and waste disposal systems.*
- (b) *Three hundred BG's were contained within the 1,000 ft shoreline buffer area.*
- (c) *Twenty BG's were classified by the Census as water block groups. None of these contained data on housing or population and thus contributed no data to this assessment.*

*Figure E* is an image of the Lower Delmarva Peninsula, Northhampton County Virginia showing certain water BG's.

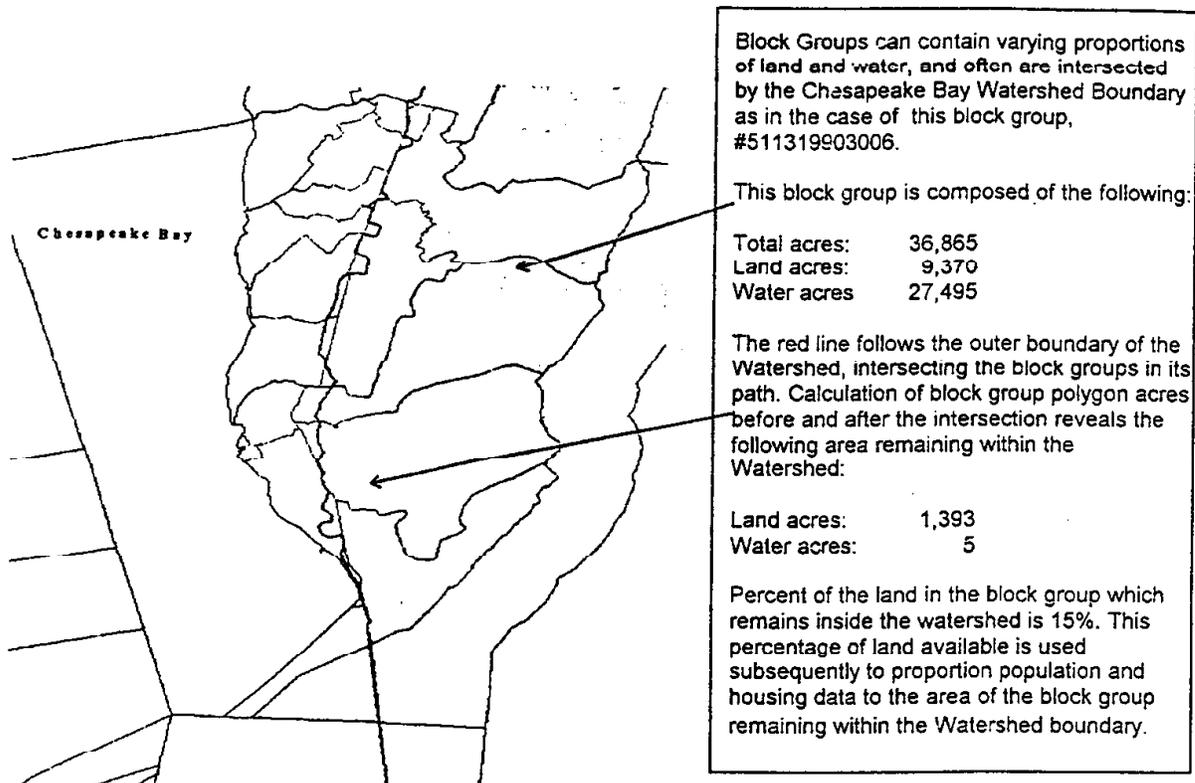


Figure E  
Lower Delmarva Peninsula, Northhampton County, Virginia

### Calculating Nitrogen Loadings

- a. *Nitrogen Loading Rates.* The literature review showed that nitrogen loading rates as reported by researchers vary greatly. "Effluent" loading estimates from the base of the septic field varied from .013 lbs/capita/day (4.8 lbs/capita/year) to .0373 lbs/capita/day (13.6 lbs/capita/year). In addition, estimates of nitrogen loadings vary even more than 30% from the mean per capita load. Some of this may be the effect of human diet since this can have an even greater effect on septic influent.<sup>12</sup>

**Nitrogen Loading Rates from the Edge of the Drainfield (lbs/day/capita):**

- .03 lbs (13.6 grams "effluent") - Lower Potomac Pollution Control Plant (present)
- .023 lbs +/- .008 lbs, (10.5 +/- 3.57 grams "effluent") - Bauman (1985)
- .025 lbs (11.4 grams "effluent") EPA (1980)
- .0132-.0373 lbs (6-13 grams "effluent") - Occoquan Sanitary District, personal communication
- .028 lbs (12.6 grams "effluent") - Cornell University (GWLF)<sup>12</sup>
- .023 lbs (10.4 grams "effluent") - EPA CZMA (1993) Onsite Waste Disposal Systems (EPA-840-B-92-02)

- b. *Nitrogen Loading Calculations.* At the suggestion of the USEPA Chesapeake Bay Program, Nonpoint Source Coordinator, an edge of drain field loading rate based on septic field effluent rates ranging from a minimum of 7.7 lbs/capita/year to a maximum of 11.0 lbs/capita/year was used for this study.

For simplicity, though per capita varies by +/- 17.6%, the nitrogen loadings used here are expressed as the mean number only.

Once the minimum and maximum population estimates were made, the per capita minimum annual loading (3492.06 grams/person/year, or 7.7 lbs/person/year) was applied at the block group level. Per capita maximum values were calculated at 4988.66 grams/person/year (11 lbs/person/year). A mean value of 4240.36 grams/person/year (9.35 lbs/person/year) was used to calculate the average per capita load. No provision for transport or chemical modification through denitrification or oxidation/reduction was applied to this "source loading." The literature review, however, identified a study by Haith, et al.<sup>13</sup> in which it was determined that ground water impacts could be reduced by 300 grams per person/year through uptake by vegetation over the field.\* Since it appeared that this study might provide a framework for follow-on regionally-based transport of septic effluent, we used these researchers' allowance although many factors such as whether or not grass is mowed and the clippings removed could affect the amount accounted for removal as vegetative "uptake." Again, there are many physical, chemical, biological and other processes which could affect edge of stream and ground water loading levels which are NOT part of this study.

**Calculating Nitrogen Loadings to Ground Water and Surface Water\*:**

$$\begin{aligned} N(\text{min}) &= P(\text{min}) * \text{GW}\% * (3492.06 - 300) + P(\text{min}) * \text{SW}\% * 3492.06 \\ N(\text{mean}) &= P(\text{mean}) * \text{GW}\% * (4240.36 - 300) + P(\text{mean}) * \text{SW}\% * 4240.36 \\ N(\text{max}) &= P(\text{max}) * \text{GW}\% * (4988.6 - 300) + P(\text{max}) * \text{SW}\% * 4988.66 \end{aligned}$$

Where:

N(xxx) is the Nitrogen load in grams/person/year  
P(xxx) is the number of persons using septic systems or other means of waste disposal  
GW% is the soils component Percent Ground Water Rating  
SW% is the soils component Percent Surface Water Rating  
300 = number of grams of nitrogen taken up by septic field cover/year

\* Based on Haith, Mandel and Wu (1992).

**Data Used in this Study**

*Soils.* The State Geographic Data Base (STATSGO) was provided by NRCS/USDA staff at the Northeast National Technical Center, Chester, PA. The data layers were assembled and clipped for the six states and clipped to the watershed boundary for each of the six states in the watershed. The resulting data layer contains 4,838 polygons and describes 265 soil types (Map Unit IDs) accounting for 40 million acres of land in the watershed. STATSGO soils for the watershed are shown in *Figure 1a*.

*Determining Ground- and Surface Water Potentials.* Simplistic rules were developed to assess the potentials of each of ten limitations for septic fields to affect soils properties between the bottom of the septic field (24 inches below the surface of the soil profile) and the bottom of the soil profile.

*KARST Topography.* KARST topography characterizes 9.15 million acres or approximately 25% of the watershed. Its presence is considered to affect septic field performance where bedrock associated with KARST topography is within 60 inches of the soil surface. Digital national geology and fault maps provided a basis for association of soils to define areas of KARST topography within the watershed.

\* note: It should be noted, however, that this uptake may be affected by whether or not grass clippings are removed from the field area or whether they are allowed to remain in place.

KARST and STATSGO data bases were geographically unioned to associate soils characteristics with KARST 'flags' to identify soils that could promote ground water effects due to the presence of KARST.

*Geology.* The Geologic Map of the United States (1:2,500,00 scale), originally published by Philip B. King and Helen M. Beikman in 1974 was converted to ARC/INFO format at USGS, Reston, Virginia. The national coverage was obtained from USGS and was clipped to the boundary of the Chesapeake Bay Watershed. The resulting geology cover contains 43 unique rock units in the Bay watershed from the original 162 in the national cover (*Figure 1b*).

*Simplistic Rules for Soils Limitations for Septic Fields 'Influencing' Septic Effluent toward Ground Water or Surface Water:*

- Soils suitable for septic operation allow septic effluent to move directly downward - toward ground water at a moderate rate.
- Certain soils limitations for septic systems direct septic effluent laterally (*sideways*) or toward the surface (*surface water*) within the soil profile. These include subsidence, flooding, shallow depth to bedrock, shallow depth to cemented pan, ponding, high water table, and low permeability.
- Other soils limitations increase ground water effects. They are: shallow depth to bedrock where the bedrock is KARST, high (rapid) permeability and a high proportion of large stones present.

*Calculating Soils Potentials from SOI-5 Tables.* A program interface was written to determine the composition for each soils map unit of each of the ten soil properties to each component of the soils map unit identifier. In this process, the SOI-5 property data base is opened and the tables "Comp" and "Layer" are selected for joining. Each map unit is assigned a ground water and a surface water "weight" based on the quantitative presence of each component contributing a limitation for septic operations. All properties are then averaged to produce a final "score" for relative surface/ground water potentials. Soils potentials for each STATSGO Map Unit are described as "percent composition influencing a surface (or ground) water effect". Each limitation was treated as equally weighted in its influence upon effluent toward surface or ground water effects.

*Displaying Surface Water Influences of Septic Field Limitations in Soils.* In order to display surface water and ground water percentage ranges simultaneously and to give some sense of the relative proportion of surface water effects to ground water effects, the following method was used:

- for each record of data a ratio was produced by dividing the soil's percent surface water score by the soil's percent ground water score.
- the mean value and standard deviation of these ratios were used to produce z-scores\* in order to standardize the data, according to the following formula:

$$z = \frac{R - \bar{R}}{\sigma}$$

where  $R$  is an individual record's score, and  $\bar{R}$  and  $\sigma$  are the mean and the standard deviation of all scores.

- the resulting z-score values were ordered on the z-score and the table broken by quintiles.
- the acreage for each soil map unit was coded as positive (+) for surface water, and negative (-) for ground water.
- the range of z-scores were scaled into 100 breaks between the minimum and maximum values and this scalar table was used to accumulate the acreages of map units falling between the z score breaks. This scalar table was then used for the display of the distribution of surface water to ground water ratios in the histogram, each quintile group being assigned a unique color in the

\* note: for a brief discussion of standardization of data, see R. Hammond & P.S. McCullagh, Quantitative Techniques in Geography, An Introduction, 2nd Edition, Clarendon Press, Oxford, 1978. pp. 43-44.

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chloropleth map and key. The relation of the z-score range to the color key is displayed above the z-score axis.

### **Polygon Boundaries for Units of Aggregation: Acetate Layers**

In order to facilitate comparisons of GIS themes at soils and Block Group levels with various geographic areas of aggregation used here, a series of clear acetate layers are provided in this section as overlays to maps presented in the Results and Discussion section below. They are identified as a series (a-e) as overlays 2:

- a. County Boundaries
- b. Census Tract Boundaries
- c. Census Block Group Boundaries
- d. Public Use Microsample Boundaries
- e. Chesapeake Bay Program Model Segments

### **Other Data Sources Used in this Study**

The CBP Watershed Model (Phase III) Segment boundaries amended as of January, 1995 together with delivery ratios for each model segment were provided by the Chesapeake Bay Program. Unprocessed post 1990 Census TIGER files were provided by NRCS/USDA, Fort Worth.

## ***RESULTS AND DISCUSSION***

### **Organization of this Report**

Summary statistics at various geographies for the watershed including the entire watershed, states, counties and model segments describing housing, population, persons per housing unit and nitrogen loadings (minimum, mean and maximum levels) and potentials for ground water, surface water and the coastal zone are provided in the body of this report. Coastal Zone loadings were calculated as nitrogen loaded directly to the coastal zone through block groups either partially or wholly contained within the 1,000 ft buffer area along the shoreline (see Water Block Groups, Methods).

Since we found there are significant differences in population by housing type and consequently with waste disposal means, results reported here are also by both parameters.

Statistics for this study can be found in the Appendix. Data produced in this report are extensive but may not present all possible combinations of interest. Consequently, our discussions address only a few of the more interesting findings.

# USDA/NRCS State Soil Geographic File (STATSGO) Chesapeake Bay Watershed

A data layer from the  
Chesapeake Bay Decision Support System  
to support the  
Chesapeake Bay Restoration Act of 1993

GIS by ARC INFO

Sources  
USDA/SCS  
State Soil Geographic File (STATSGO)  
1:250,000 Shoreline Added  
by  
NCRl Chesapeake

Figure 1



NCRl Chesapeake



SCS State Conservationists



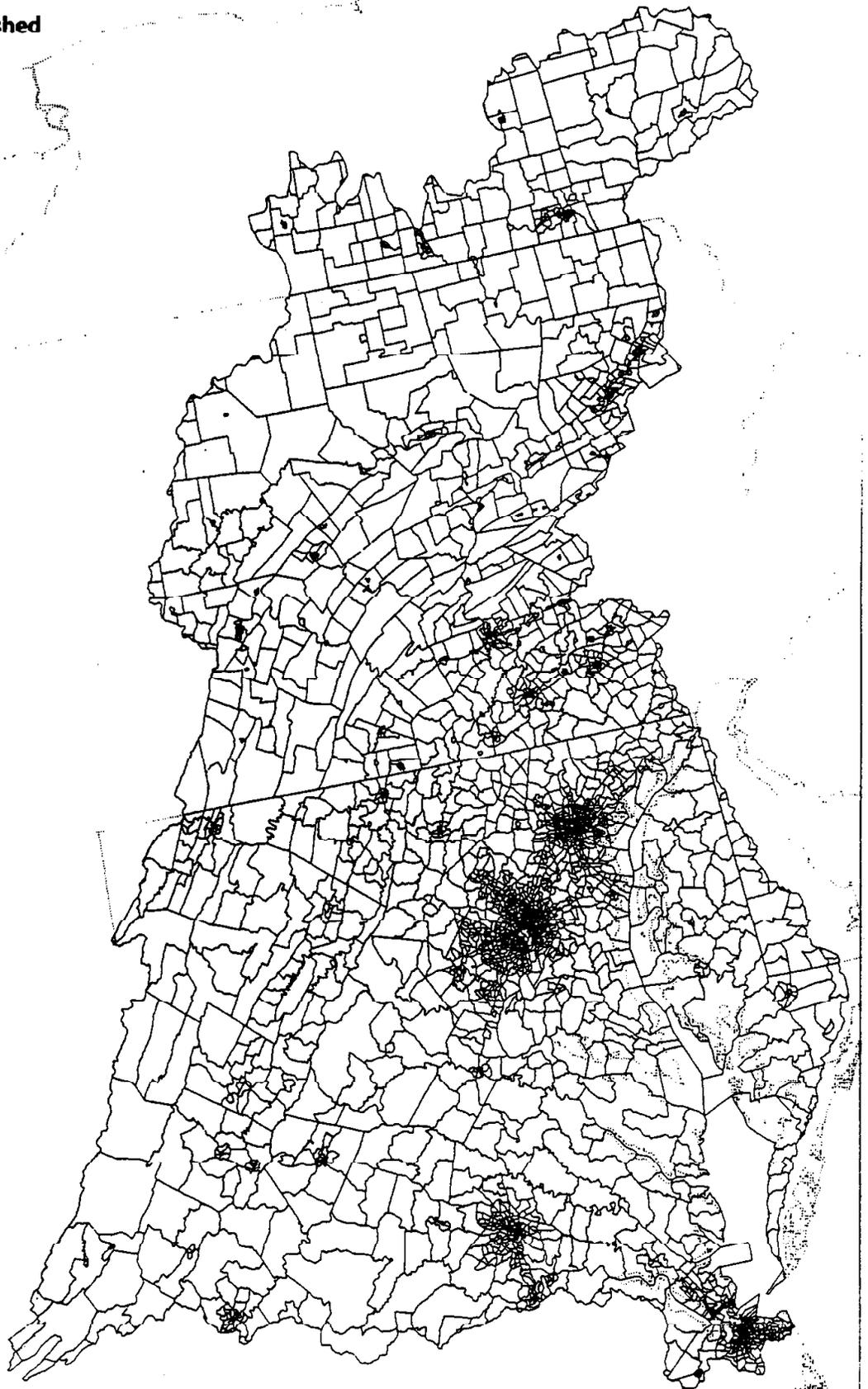
# Census Tract Boundaries

## Chesapeake Bay Watershed

Sources  
1992 TIGER/Line File  
U.S. Department of Commerce  
Bureau of the Census

Processed as Arc/INFO Line  
and Polygon Coverages 1995  
by  
NCRI Chesapeake, Inc.

Figure 2.b



NCRI Chesapeake



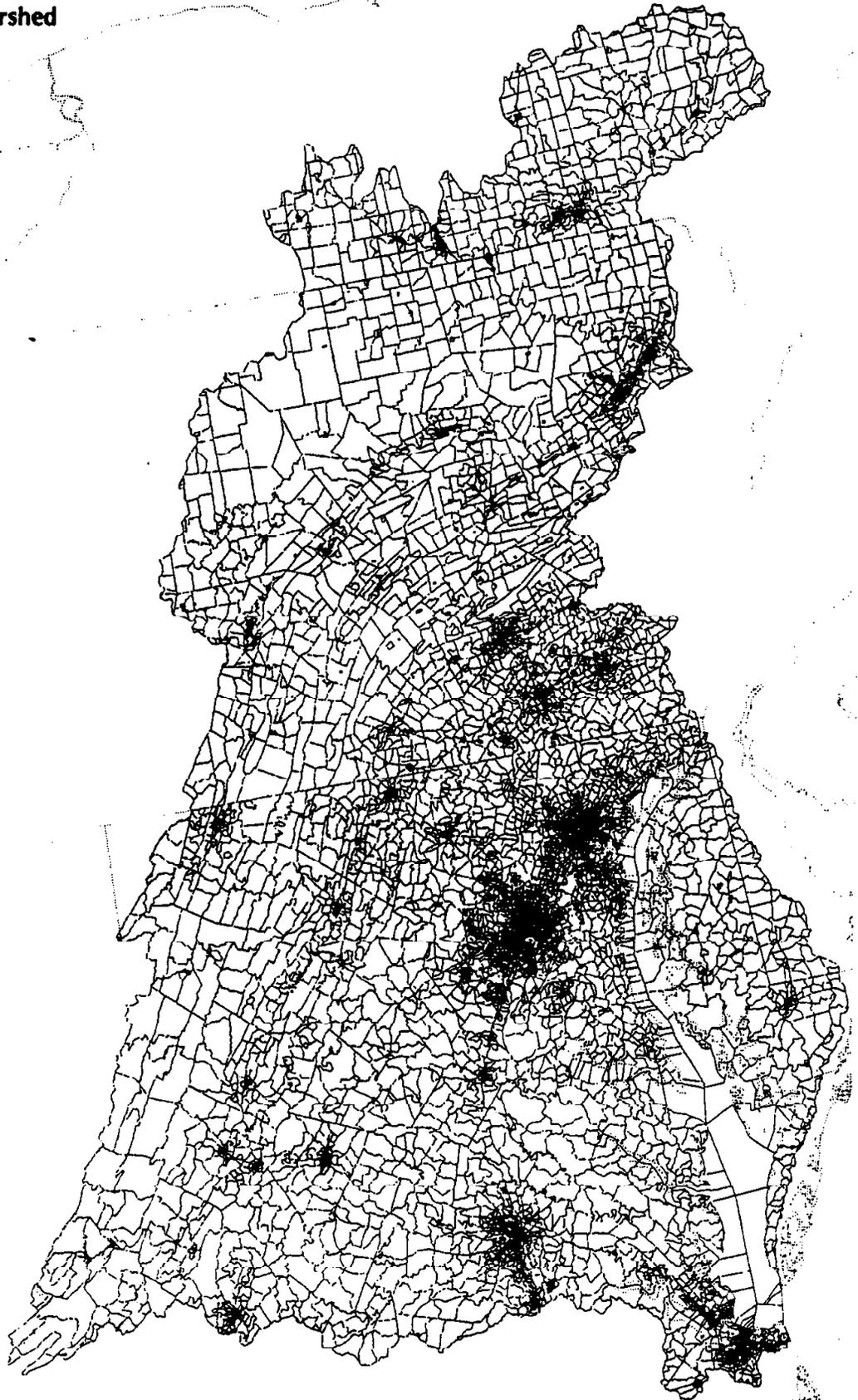
# Census Block Group Boundaries

## Chesapeake Bay Watershed

Sources  
1992 TIGER/Line File  
U.S. Department of Commerce  
Bureau of the Census

Processed as Arc/INFO Line  
and Polygon Coverages 1995  
by  
NCRI Chesapeake, Inc.

Figure 2.c



NCRI Chesapeake



# Public Use Microsample Area (PUMA) Boundaries

## Chesapeake Bay Watershed

Sources

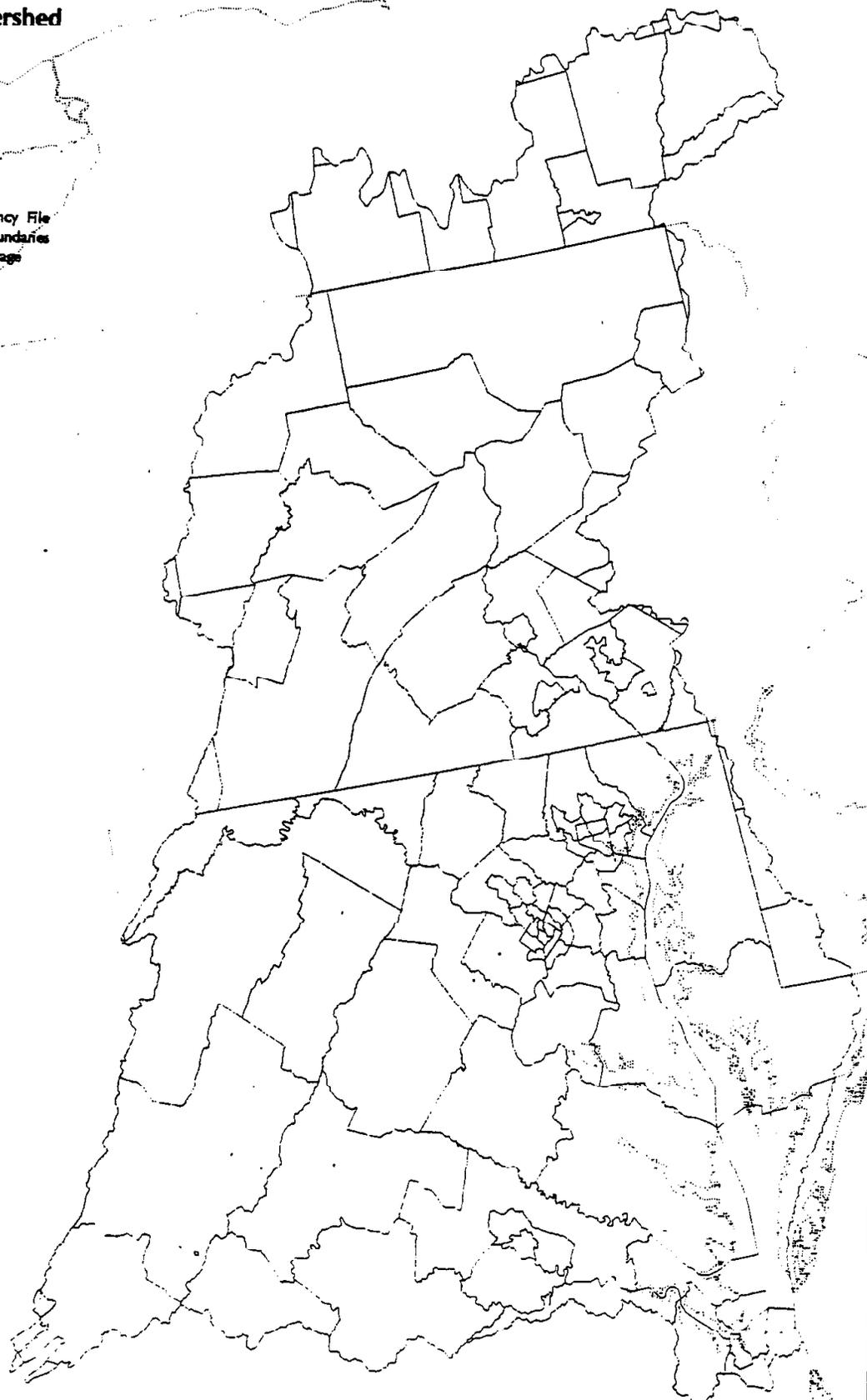
Department of Commerce  
Census Bureau

PUMA - Census Block Group Equivalency File  
Matched to Post-Census TIGER/Line Boundaries  
and converted to an Arc/Info coverage  
by

NCRI Chesapeake, Inc.

A data layer from the  
NCRI Chesapeake Data Library

Figure 2.d



NCRI Chesapeake

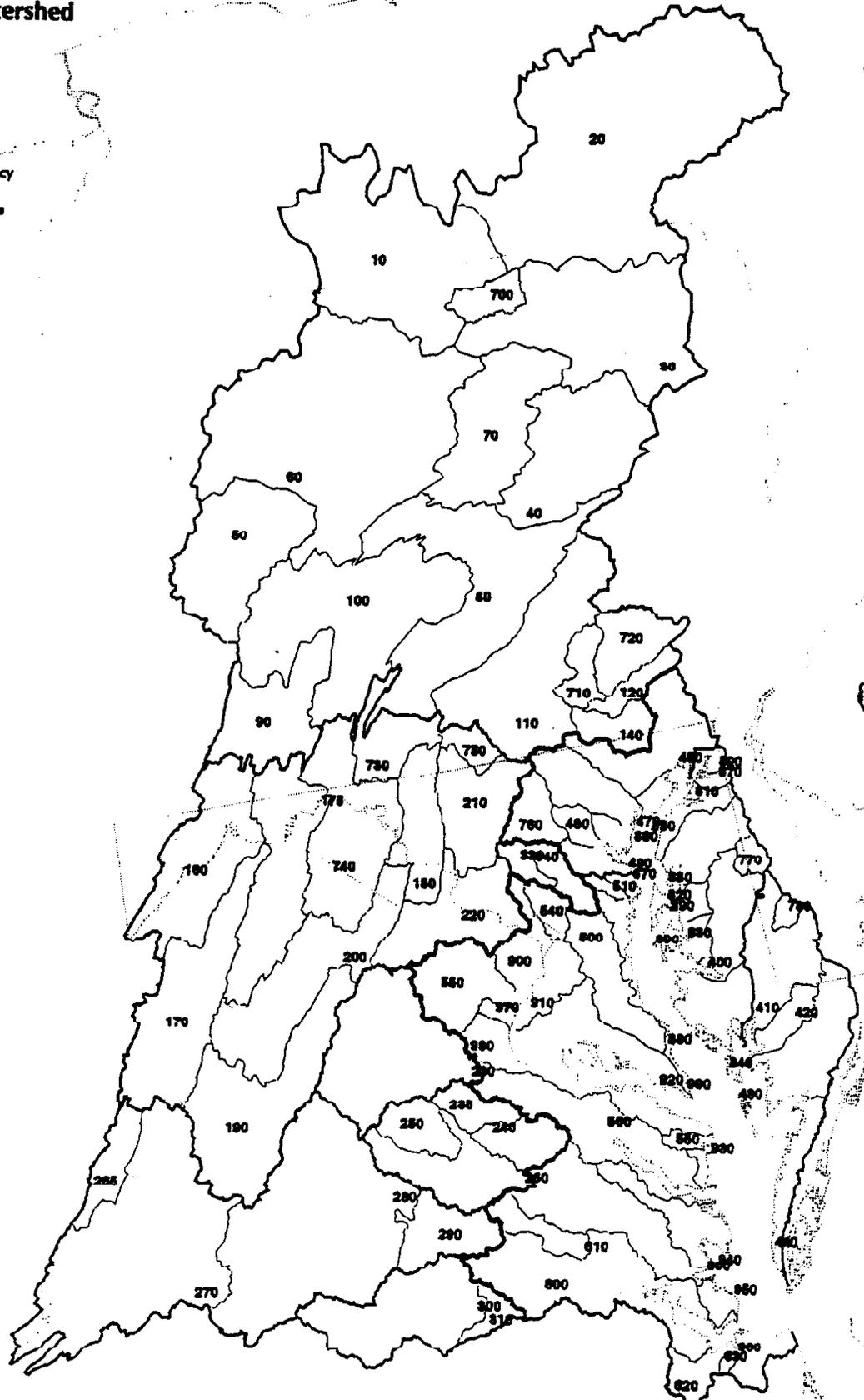


# Chesapeake Bay Program Model Segments

## Chesapeake Bay Watershed

Source:  
Environmental Protection Agency  
Chesapeake Bay Program  
Model Segment Boundary File  
Scale: 1:250,000

Figure 2.e



NCRI Chesapeake



# Geologic Map of the Chesapeake Bay Watershed

A Data Layer from the  
NCRI Chesapeake Data Library  
GIS by ARC INFO

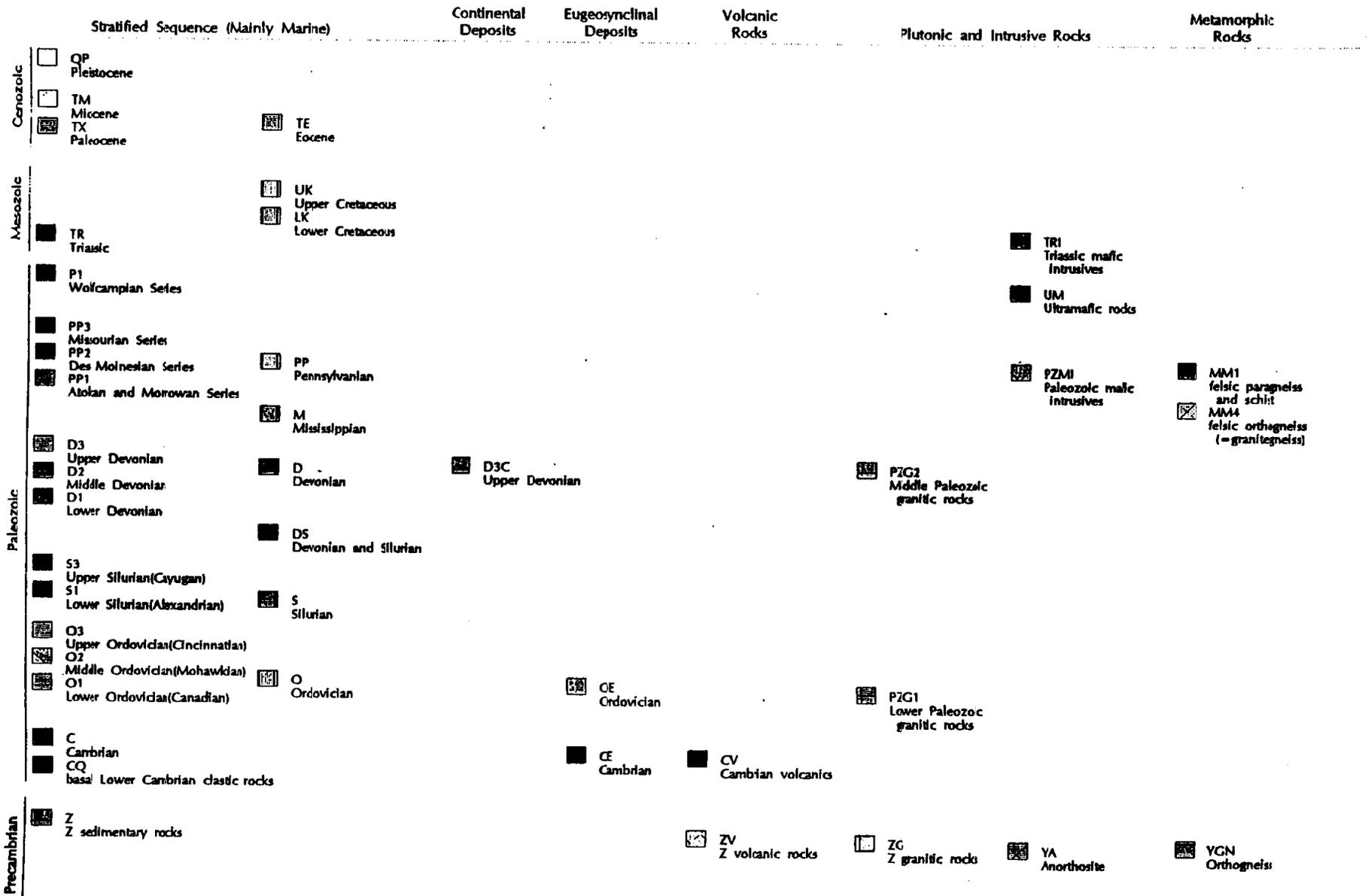
Sources  
USGS 1:2,500,000  
Geology of the United States  
from original by  
B. King and M. Beikman, 1974  
Digital conversion by:  
P. Schruben  
R. Arndt  
W. Bawiel

Figure 3



Miles  
50 25 0 50

# Legend 43 unique rock units in the Chesapeake Bay Watershed



## Housing Units, Population and Means of Waste Disposal in the Chesapeake Watershed

### *The Chesapeake Watershed*

- a. *Housing Units.* A summary of housing units, population and means of waste disposal in the watershed is shown in *Table 3*. There are 5,292,582\* occupied housing units in the watershed. The majority (72.5%) is urban. A significant proportion is rural (26.4%) and only 0.6% are farm type housing. Sewer services are divided among the 3,965,950 housing units as urban, (91.7%), rural (9%), and farm type (0.4%) housing units. Septic serves 23.9% of the housing units and 1.2% of the housing units use other means of waste disposal. Of the septic systems supported, 15.3% are urban, 80.7% are rural and 4.8% are farm type housing units. Of the 61,186 housing units using other means of waste disposal, 18.6 percent are urban, 76.3 percent are rural, and 5.1 percent are farm type housing.

*The housing unit domain for this study is the 1,326,633 housing units (25% of all HUs) depending on septic systems or other means of waste disposal in the Chesapeake Bay watershed. (1990 Census)*

Many urban housing units (94.7%) are served by sewer systems as might be expected. Septic and other means of disposal serve 5.0% and 0.3% of the urban housing units respectively. A significant number of rural housing units (23.4%) are served by sewer. Of the rural housing units, 73.4% are served by septic systems and 4.3 percent use other means of disposal. Farm housing units are almost entirely dependent on septic with the exception of the 5.6% using other means and 1.9% using sewer systems.

Together, the 1,326,633 housing units using septic or other means of waste disposal represent 25.07 percent of the total housing in the watershed. This number agrees almost exactly with the number of housing units estimated by EPA to be depending upon septic systems some time ago.<sup>8</sup>

- b. *Population.* There are 13,787,250 people in the Chesapeake watershed (*Table 3B*). Of these, 9,773,926 live in housing units designated by the Census as urban; 3,849,733 as rural and 163,591 as farm type housing. Of the urban population, 94.7% depend on sewer, 5.0% on septic and 5.3% on other means of treatment. Of the rural population, a significant proportion (21.4%) depend on sewer, 73.2% on septic and 3.3% on other means of disposal. Of the farm population, only 1.9% use sewage treatment, 92.1% depend on septic and 5.7% use other means of disposal.
- c. *Persons per Housing Unit.* The number of people per HU over the entire watershed averages 2.6. The average number of people per HU using either septic systems or other non-sewered means of waste disposal is 2.84, higher than that for sewer-served households. For septic systems it is 2.85. For those dependent on other means, it is 2.79 (*Table 3C*). Thus, the average number of individuals per non-sewered systems is greater than the number of individuals per household within the basin.

### *State Summaries of Housing and Population by Housing Type and Means of Waste Disposal*

*Table 4* shows state level summaries for housing units by waste disposal means and average population in urban, rural and farm housing unit types.

- a. *Housing.* The highest number of housing units in the watershed is found in Maryland and Virginia (1.740 and 1.730 million) or 32.7% and 32.8% of the total respectively, *Table 4-A1*. Pennsylvania has significantly fewer HUs (1.236 million or 23.4

*The population domain of this study is the 3,773,490 people (27.3% of the total population) using septic fields or other means of waste disposal in the Chesapeake Bay watershed.*

\* note: Data used in this study are from the 1990 Census though they are discussed in the present tense.

% of the total). Both Maryland and Virginia, however, support a significant number of these HU's with sewer. Thus, 33.3% of the housing units in the watershed depending on septic and other means of waste disposal are in Pennsylvania (442,872 Housing Units compared with 386,633 houses in Virginia and 321,210 in Maryland). More than 90% of the housing in West Virginia and Delaware that are dependent on septic and other means of waste disposal are rural. Both states also have the highest percentages of HU's as farm type housing. Interestingly, more than 20% of the housing dependent on septic fields and other means of disposal in both Maryland and Virginia are urban.

Though all of the housing units in the District of Columbia are classified as urban, 1,702 housing units are served by septic and a high proportion of these (1,198 units) are using non-sewered, non-septic-dependent means of waste disposal.

b. *Population.* Maryland, Virginia and Pennsylvania contribute the highest populations to the watershed (4.62, 3.18 and 4.52 million, respectively, *Table 4-B1*). For populations dependent on septic and other means of waste disposal, however, Pennsylvania with 1.26 million people leads Virginia with 1.08 million and Maryland with 0.94 million each (*Table 4-B2*).

c. *Persons per Housing Unit.* The average number of persons per housing unit in the watershed is 2.6 (*Table 4-C1*). The average number of persons per housing unit using septic and other means of waste disposal is 2.8 (*Table 4-C2*). Delaware and Maryland have the highest average number of persons per HU at 2.7 and interestingly, the District of Columbia has the highest number of persons per housing unit depending on septic or other means of disposal (3.2 persons per housing unit). Maryland has the next highest ratio (2.9 persons/HU, *Table 4-B2*). Farm Housing units have the highest number of persons per housing unit averaging 3.0. Pennsylvania and New York exceed the average with 3.4 persons/farm HU and 3.0 persons/farm HU using septic and other means for waste disposal respectively.

There are fewer houses in the watershed in Pennsylvania than in Maryland or Virginia, but the number of housing units and the number of persons per housing unit depending on septic or other means of waste disposal is greatest in Pennsylvania.

### *Aggregation of Census Block Statistics to Other Geographies*

*Model Segment Summaries.* Summaries of counts of housing units using sewer, septic and other means of waste disposal together with housing types, population and average number of persons per housing unit are provided for each Model Segment for the Bay in *Table 5*.

*County summaries* for the watershed for housing units, population, housing types, means of waste disposal and numbers of persons per housing unit are found in *Tables 3-9*.

## **Physical Resources and the Potential for Nitrogen from Septic Fields and other Sources to Affect Ground Water and Surface Water**

### *Soils Limitations for Septic Fields: Influence on Ground Water and Surface Water*

a. *Soils Limitations for Septic Fields Modified to Describe Surface and Ground Water Potentials.* The criteria for estimating effects of soils limitations in affecting septic suitability is described in the National Soils Handbook and were developed for this study as described in *Methods*. *Table D* summarizes them. Eleven limitations apply to soils in determining their suitability for septic field operation. One of these, 'USDA texture' with a restrictive feature as 'Permafrost' does not apply in this region. Cut-offs selected are those which apply to severe limitations and these have been aligned under the column "surface water" effects unless the factor induced ground water effects. Limitations including high permeability (*g*) and large stones (weighted average to 40 inches, *j*) in the profile will direct effluent downwards. Shallow depth

to bedrock (c) where soils are associated with KARST are indicated in the Ground Water potential column. Percent compositions of soils were thus the total of both surface and ground water effects.

| Item No. | Property   | Ground Water                  | Surface Water        | Restrictive Feature                  |
|----------|--|-------------------------------|----------------------|--------------------------------------|
| n/a      | USDA Texture   | n/a                           | Ice                  | Permafrost                           |
| a.       | Total Subsidence (Inches)                              |                               | >24                  | Subsidence                           |
| b.       | Flooding   |                               | Frequent, Occasional | Flooding                             |
| c.       | Depth to Bedrock (Inches)                              | <40 in association with KARST | <40                  | Depth to rock <sup>1</sup>           |
| d.       | Depth to Cemented Pan (Inches)                         | <40                           | Cemented Pan         |                                      |
| e.       | Ponding  |                               | Yes                  | Ponding Occurs                       |
| f.       | Depth to High Water Table (ft)                         |                               | <4.0                 | Wetness                              |
| g.       | Permeability (24-60", In/Hr)                           |                               | <0.6                 | Percolates slowly (Low Permeability) |
| h.       | Slope (percent)  |                               | >15.0                | Slope                                |
| i.       | Permeability (24-40", In/Hr)                           | >6.0                          |                      | Poor filter (High Permeability)      |
| j.       | Weight Percent Stones >3"<br>(Weighted average to 40") | >50                           |                      | Stoney                               |

<sup>1</sup> Produces a surface water effect except in combination with KARST topography, which produces a ground water effect. (See Figure 2).

Table D  
Soils Limitations For Septic Fields Modified to Describe Surface and Ground Water Potentials

- b. *Soils Limitations by STATSGO Map Unit Summarized by State.* A table of these effects for each limitation by percent composition and acreage for each of the 265 Map Units in the watershed for each state is shown in *Table 1*. KARST and Critical Area flags (soils found within the 1,000 ft buffer area along the coastal zone shoreline) for each soil are also shown.

Many data are aggregated to the state level in this study. A summary of the above table showing the soils with percent minimum and maximum ranges for ground water and surface water potentials for each state is shown in *Table 5*. The predominant influence of soils by total composition is toward ground water by the simple approach used here. The soil with the maximum surface water effect is urban land in Pennsylvania (PA039) with 36.4 % surface water and 63.6% ground water effect by composition. The soil with the highest ground water effect is a KARST-flagged Carbo-Chilhowie-Frederick Soil (88.3% ground water and 11.7 % surface water effect in Virginia and West Virginia). Two of the soils with maximum surface water effect are in Maryland in the critical area and in the coastal buffer area in Delaware.

- c. *Mapping Soils Limitations in the Chesapeake Watershed.* Each of the limitations was mapped in order to describe its geographic location and its extent by STATSGO polygon. The influence of soils limitations to produce a surface water potential is shown in *Figure 4 (a-j)*. Green lines are EPA's model segment boundaries. Blue denotes a ground water- and light pink, a relative surface water potential. *Panels a-h* describe the geographic distribution of these effects. *Panels i* and *j* describe two factors (High Permeability and Large Fragments present in >50% composition) which induce a ground water effect. The range between ground water and surface water potentials indicated in the key examines the relative effect of limitations upon ground water effects only. The scale of the key is kept constant for comparison between panels.

STATSGO is a state level soils data layer. It is intended for regional and state level analyses. STATSGO encompasses up to 21 different soils which can be located anywhere within the STATSGO soils polygon. In practice, septic fields are sited within soils that are suitable for septic operation using on-site soils analyses. STATSGO, therefore, is used in this study only as a generalized spatial indicator of overall SOILS suitability for septic potentials.

*Soils Components Related to Surface Water Potentials.* Of the panels (a-h), Subsidence, Cemented Pan and Ponding are all present by percent weighted composition less than 20%. Thus no effect is registered at the scale chosen here. Small areas of soils with flooding limitations are visible along the Susquehanna River basin and its tributaries and in the eastern foothills of the Blue Ridge in Virginia. A greater net effect but with limited geographic extent is visible in the Delmarva and along the eastern shore tributaries to the coastal zone in Virginia. Depth to bedrock (panel c) is more prevalent than flooding – having its greatest effect along the Blue Ridge and the Appalachians and in broadest geographic extent in northern Pennsylvania. Wetness (Seasonal High Water Table, panel f) is the next more prevalent limitation being rather extensive in the upper watershed in northeastern/central Pennsylvania and New York State and the Eastern Shore of Virginia and the Delmarva.

Low permeability (panel g) seems to be the most geographically extensive limitation in the watershed. It is observed nearly everywhere though most extensively in New York State, the Patuxent and the Delmarva.

*Soils Components Related to Enhanced Ground Water Potentials.* High permeability (panel i) has little effect over most of the watershed except in a small portion of far western Maryland. Its small representation suggests a small net average surface water potential with respect to this particular limitation.

Large rock fragments (panel j) are very uniformly present in soil composition in the watershed. This element is related to enhanced ground water potentials and thus provides no differentiation between surface water and ground water potentials in these maps.

- d. *Association of KARST Topography with Soils Having a Shallow Depth to Bedrock.* KARST topography is associated with approximately 9.15 million acres or approximately 25% of the Chesapeake watershed. Figure 5 shows the location of those soils having a shallow depth to bedrock (between 0 and 59 inches) and those where the bedrock is greater than 59 inches from the surface. Soils with these associations are flagged as KARST in Tables 1 and 9.
- e. *Composite Effect of Soils Limitations on Ground Water Potentials in the Chesapeake Bay Watershed.* Figure 3 displays the ratio of composite surface water to ground water effects for the soil units in the Chesapeake Bay watershed. Shades of blue indicate very little relative surface water effect for the soil group. Shades of pink indicate relatively higher surface water effects. Orange indicates a median effect (35-45% by composition) between the two, surface water and ground water. The maximum effect of soils limitations promoting a surface water potential is 62% by composition. These soils, found primarily in north central Pennsylvania, represent just 10,000 acres in the watershed.

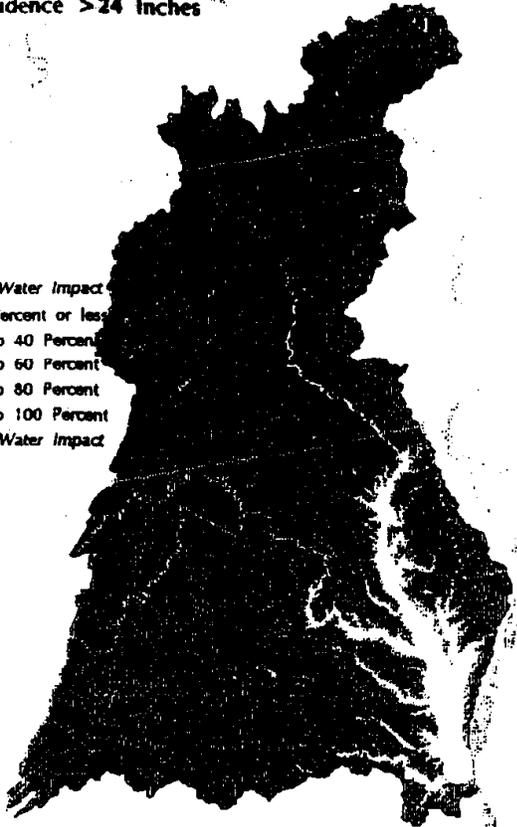
The histogram may be used to examine the distribution of the data around the arithmetic mean (zero on the z-score scale), or the distribution of soils' acreages as proportioned to surface water or ground water potentials along the x-y axes of the histogram. It demonstrates the overall trends by means of the same color ramp as the chloropleth map. An increase on the y-axis above the x-axis indicates an increase in acres assigned to surface water potentials, and a decrease along the y-axis below the x-axis indicates an increase in acres assigned to ground water potentials. Positions along the x-axis describe relative surface water potentials.

The z score axis is correlated with the histogram x-axis. As such, zero on the z-score axis marks the mean (36) and the numbers (+-) indicate the number of standard deviations from the mean. Two standard deviations above and below the mean will contain 95% of the data.

These data exhibit the "skewedness" toward ground water effects as shown in the larger proportion of acres below the x-axis and the closeness of the mean to the ground water end of the ratio scale as shown in Table E and in Table 1.

**Figure 4.a**  
Subsidence >24 Inches

Surface Water Impact  
20 Percent or less  
21 to 40 Percent  
41 to 60 Percent  
61 to 80 Percent  
81 to 100 Percent  
Ground Water Impact



**Figure 4.b**  
Flooding Frequently or Occasionally



**Figure 4.c**  
Depth to Bedrock <40 Inches



**Figure 4.d**  
Depth to Cemented Pan <40 Inches

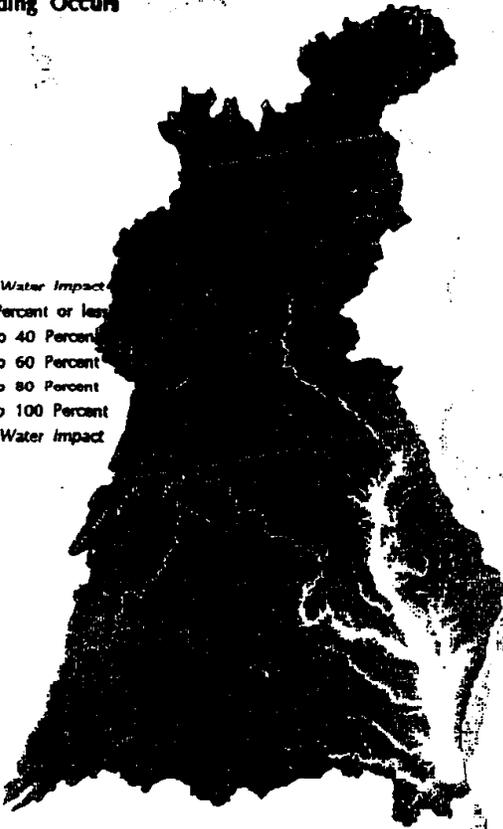


**Figure 4.e**  
Ponding Occurs

Surface Water Impact

|   |                    |
|---|--------------------|
| □ | 20 Percent or less |
| ▤ | 21 to 40 Percent   |
| ▥ | 41 to 60 Percent   |
| ▦ | 61 to 80 Percent   |
| ▧ | 81 to 100 Percent  |

Ground Water Impact



**Figure 4.f**  
Wetness (Depth to High Water Table < 4ft)



**Figure 4.g**  
Low Permeability (Permeability < 0.6 Inches per Hour)



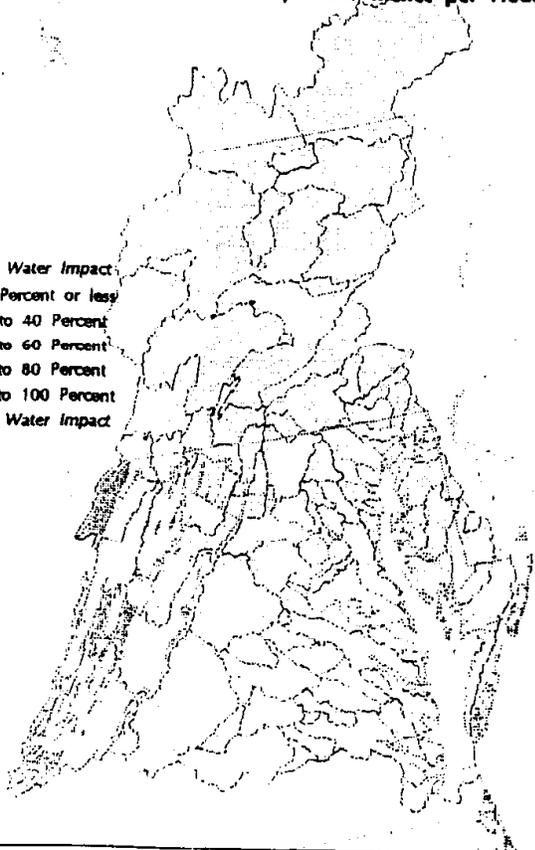
**Figure 4.h**  
Steep Slope > 15%



**Figure 4.i**

**High Permeability (Permeability > 6.0 Inches per Hour)**

- Surface Water Impact*
- 20 Percent or less
  - ▨ 21 to 40 Percent
  - ▩ 41 to 60 Percent
  - ▧ 61 to 80 Percent
  - 81 to 100 Percent
- Ground Water Impact*



**Figure 4.j**

**Stoney (Rock Fragments > 3 Inches Present > 50%)**



**Figure 5**

**Association of KARST Topography and Soils with a Shallow Depth to Bedrock**

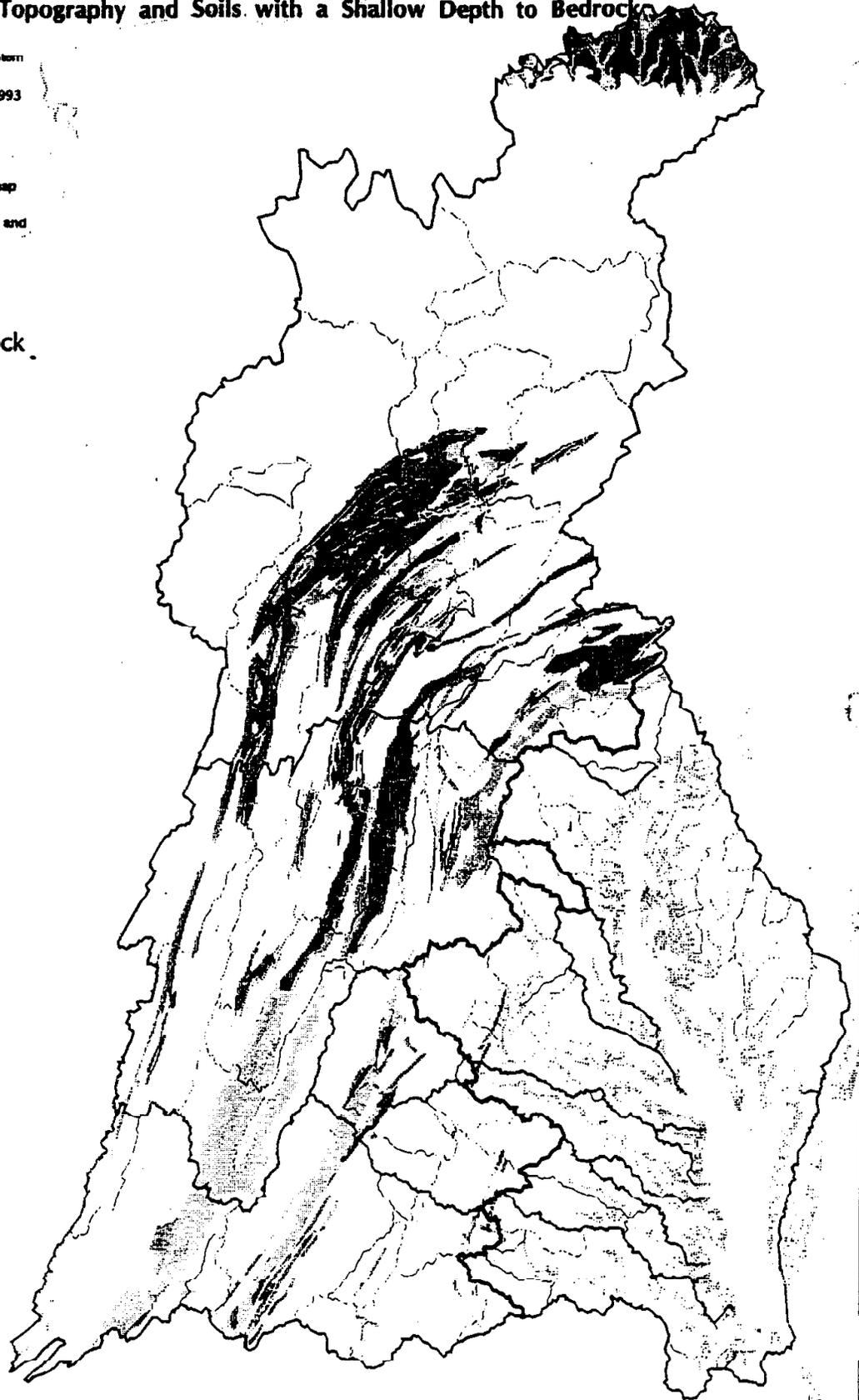
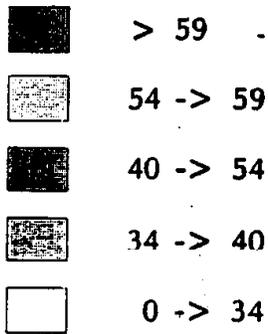
An Analysis from the  
Chesapeake Bay Decision Support System  
to support the  
Chesapeake Bay Restoration Act of 1993

GIS by ARC INFO

**Sources**

The soil information used for this map  
was NRCS 1994 STATSGO data.  
STATSGO was compiled at 1:250,000 and  
designed to be used primarily for  
regional, multistate, State and  
river basin resource planning,  
management and monitoring.

**Depth to Bedrock  
in Karst Areas**



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**Figure 6. Composite Effect of Soils Limitations on Water Resource Potentials In the Chesapeake Bay Watershed**

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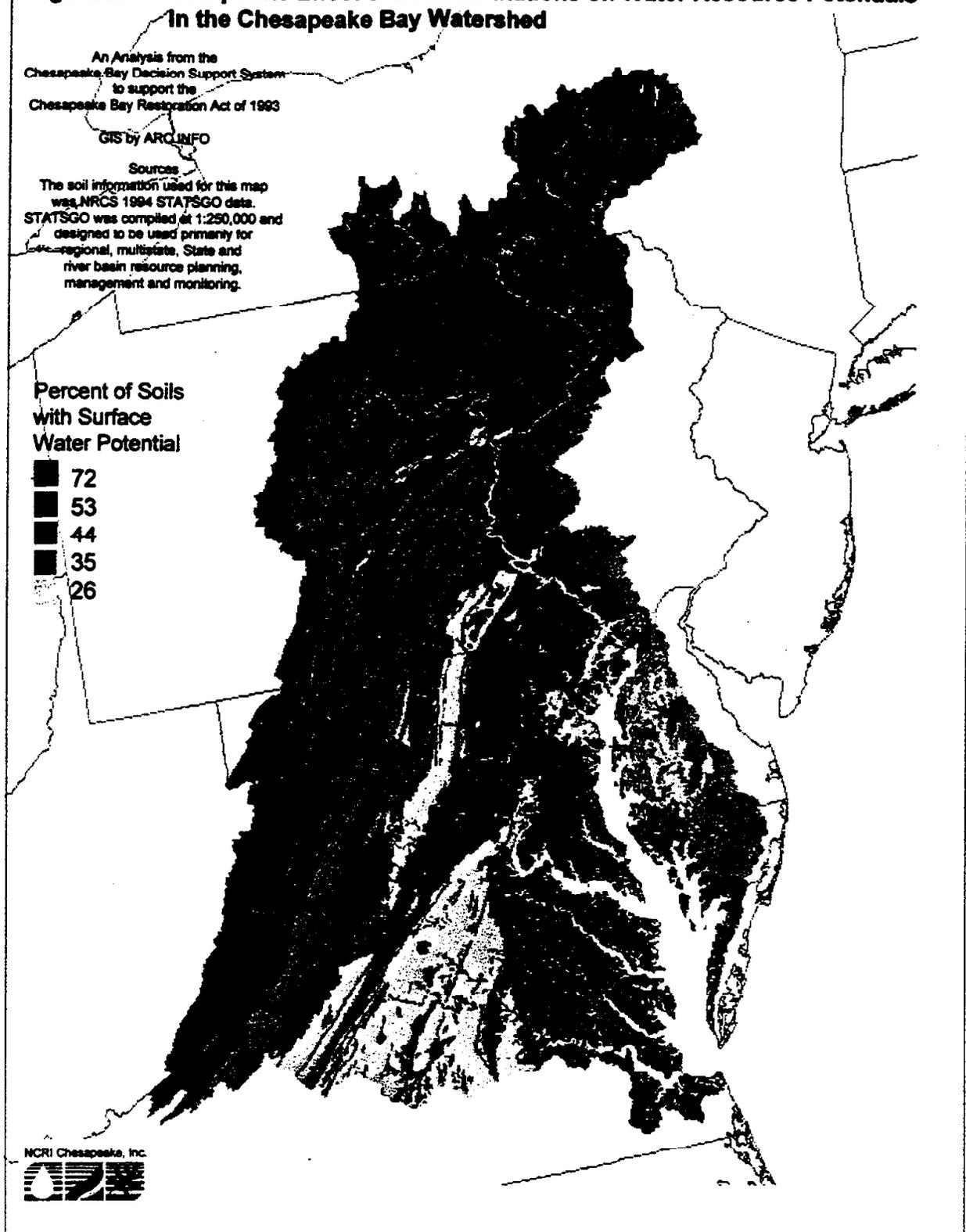
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management and monitoring.

**Percent of Soils  
with Surface  
Water Potential**

- 72
- 53
- 44
- 35
- 26



Several physiographic provinces with relative potentials for surface water potentials, though never dominant in these STATSGO soils, are apparent in this map. They are a large region in the upper watershed in New York excepting immediate stream drainage ways, in northeastern Pennsylvania, all of a similar large region in the upper Potomac River basin, along the ridgelines of the Blue Ridge mountains and in the Appalachians. The most predominant regions of ground water potential are found in the eastern foothills of the Blue Ridge and in a large triangular area in the south central part of the watershed. Other smaller areas are found in the northwestern Delmarva.

## Nitrogen Loadings from Census Block Groups, Surface Water and Ground Water Potentials Directly to the Coastal Zone

### Nitrogen Loadings by Census Block Group to the Watershed

- a. *Source Loadings by Block Group.* The CBP's Request for Proposal asked only for pounds of nitrogen loaded to surface water, ground water and the coastal zone.\* Nitrogen loadings were calculated for each Housing Unit and distributed to soils polygons (and composite surface and ground water potentials) within each block group through intersections of the block group polygons with STATSGO polygons as described in Methods.

Nitrogen loadings estimated at the individual block group level were divided into six classes ranging from the lowest (0-22 lbs/BG) through a maximum of 32,461 lbs of nitrogen per block group. A total of 4,674 Block Groups (BGs) contained no houses or contained only housing units served by sewer systems.

Figure 7 shows the nitrogen loading by Block Group in the Chesapeake watershed. A mean total of 33.47 million pounds (see Calculating Nitrogen Loadings, Methods) of nitrogen are estimated† by these methods to be loaded to the watershed per year. The highest annual mean number of pounds of nitrogen produced by a block group was 32,461 pounds. The lowest was 0.015 pounds. Six classes of loading rates were developed for this display. A total of 6.39 million acres received loading in the highest class ranging between 6,835 pounds and 32,461 pounds. Most of this was in the lower Susquehanna and the area surrounding Baltimore. Extensive areas are also visible in New York State and in North Central Pennsylvania. Significant loadings are observed in the Patuxent, in the Delmarva and the eastern shore regions of Virginia.

Each Census Block Group accounts for 250 HUs. The effect of showing this in maps is to 'over-display' the spatial extent of larger block groups in rural areas and 'under-display' the spatial extent of block groups in urban areas. Care is thus needed in visually allocating population, housing and nitrogen loadings by Block Group in these assessments. The smallest Block Group is 0.19 acres and the largest is 167,476 acres.

White areas visible within cities (Washington DC, Baltimore, MD and Richmond, VA, for instance) denote areas where sewer service is the primary source of waste treatment. An external 'ring' of septic density surrounding the City of Richmond is visible in this figure.

- b. *Source Loadings Partitioned to Ground Water.* Soils in the watershed as a whole display a predominantly ground water potential for septic use (Figure 6). Figure 7b shows the portion of the nitrogen load that is partitioned from Census Block Groups to ground water according to soils potentials described above. For comparison, the six loading class breaks shown in Figure 7a were maintained in this figure to illustrate

\* note: Rates of loadings (e.g., pounds per acre) are also important. Loading rates per block group acre are also provided in this study (see below).

† note: all numbers for population and nitrogen loadings are estimates and have specific levels of accuracy and/or ranges of data from which they are derived (see data precision in Tables, and estimates of loading rates for nitrogen in Methods and in Table 7, for instance). Variation in nitrogen loadings expressed as minimum, mean and maximum also reflect statistical variation in population estimates (see Methods).

partitioning of loading classes (*Figure 7b*) to ground water or surface water. The influence of surface water effects observed in soils (*Figure 4*) is apparent in this figure in that loadings in New York (*Figure 7a*) appear partitioned toward ground water in *Figure 7b*. This is also apparent in the Delmarva and in the Central Susquehanna River basin.

- c. *Source Loadings Partitioned to Surface Water.* *Figure 7c* shows the corollary surface water potential of soils upon Nitrogen loadings. Note the loading distribution is significantly shifted to lower numbers overall and that amounts potentially diverted to surface water in New York State are apparent in this map.
- d. *Source Loadings Directly to the Coastal Zone from within the 1,000 ft. Shoreline Buffer Strip.*

Development and regulations of shoreline of the Bay has been a contentious issue. Nitrogen loadings in the block groups at least partially overlaying water bodies together with those wholly or partly contained in the 1,000 foot Critical Area in Maryland and the 1,000 ft shoreline buffer area were considered for the purposes of this study to be loading nitrogen from septic fields directly to the coastal zone. *Figure 5a* shows those loadings by Census block group within this shoreline strip (a). *Figure 5b* shows those block groups which at least partially overlay the 1,000 foot buffer area along the shoreline.

#### *Nitrogen Loading Summaries*

- a. *The Chesapeake Watershed.* *Table E* summarizes total nitrogen loading and its partitioning to surface water, ground water loading to the coastal zone by housing unit type.

The total mean annual nitrogen loading to the watershed from septic and other means of waste disposal is estimated to be 33.42 million pounds at the edge of the drainfield. Of this amount, 23.75 million pounds (71%) are estimated to be partitioned to ground water and 8.754 million pounds 26.2% are estimated to be partitioned to surface water. Nine hundred sixty-six thousand pounds (2.9%) are estimated to be loaded directly to the coastal zone.<sup>32</sup>

*Of the nearly 1.0 million pounds of nitrogen loaded directly to the coastal zone, more than one-third (35.6%) is estimated to be from urban housing units using septic fields or other means of waste disposal.*

Rural housing units are responsible for 80.1 percent of the total load to the watershed; urban housing units for 15.6% and farm housing units, 4.2% (Percent of grand total, *Table E*). The partitioning of nitrogen to surface and ground water is not affected differentially by housing unit type from proportions of nitrogen loaded by each housing type.

<sup>32</sup> note: Care needs to be applied in that actual development allocated to these block groups are distributed evenly upon land areas within these BGs. Nitrogen loadings are thus averages of the block group and do not represent actual housing unit locations.

**Figure 7.a Nitrogen Loadings (lbs) from Non-Sewered Septic and Other Systems by Block Groups to the Chesapeake Bay Watershed**

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Chesapeake Bay Decision Support System  
to support the  
Chesapeake Bay Restoration Act of 1983

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Sources  
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river basin resource planning,  
management and monitoring.

Pounds

■ 6,609 - 32,388

■ 4,368 - 2,971

■ 812 - 1,842



Figure 1.D

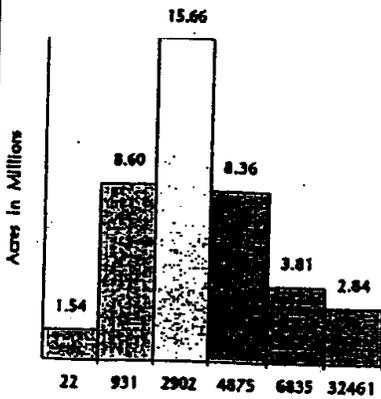
### Nitrogen Loadings (lbs) Partitioned to Ground Water

An Analysis from the  
Chesapeake Bay Decision Support System  
to support the  
Chesapeake Bay Restoration Act of 1993

GIS by ARC/INFO

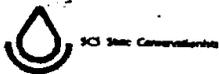
**Sources**

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river basin resource planning,  
management and monitoring.



Lbs of Nitrogen per Blkgp to GW

NCRI Chesapeake



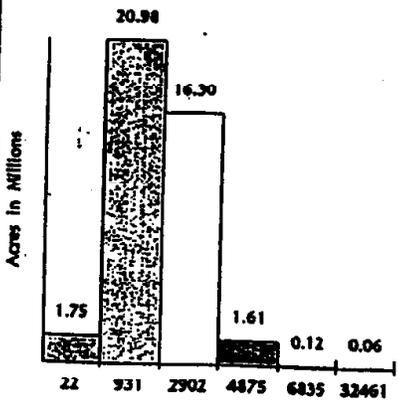
# Nitrogen Loadings (lbs) Partitioned to Surface Water

An Analysis from the  
Chesapeake Bay Decision Support System  
to support the  
Chesapeake Bay Restoration Act of 1993

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### Sources

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river basin resource planning,  
management and monitoring.



Lbs of Nitrogen per Bkgpp to SW

NCRI Chesapeake



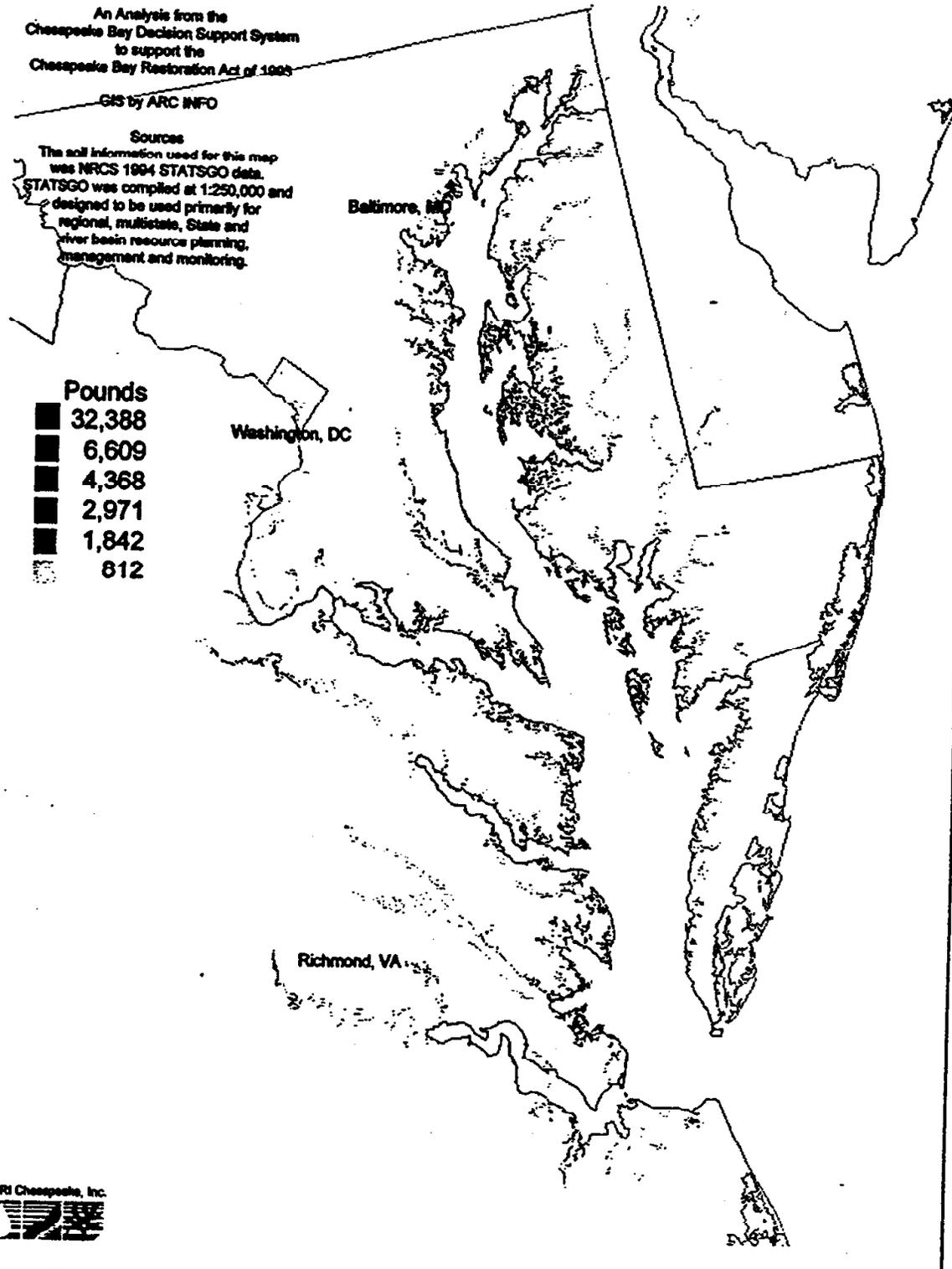
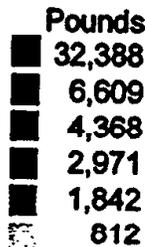
**Figure 8.a Nitrogen Loading Rates (lbs) per Census Block Group within a 1000 ft Buffer Zone along the Chesapeake Shoreline**

An Analysis from the Chesapeake Bay Decision Support System to support the Chesapeake Bay Restoration Act of 1995

GIS by ARC INFO

**Sources**

The soil information used for this map was NRCS 1994 STATSGO data. STATSGO was compiled at 1:250,000 and designed to be used primarily for regional, multistate, State and river basin resource planning, management and monitoring.

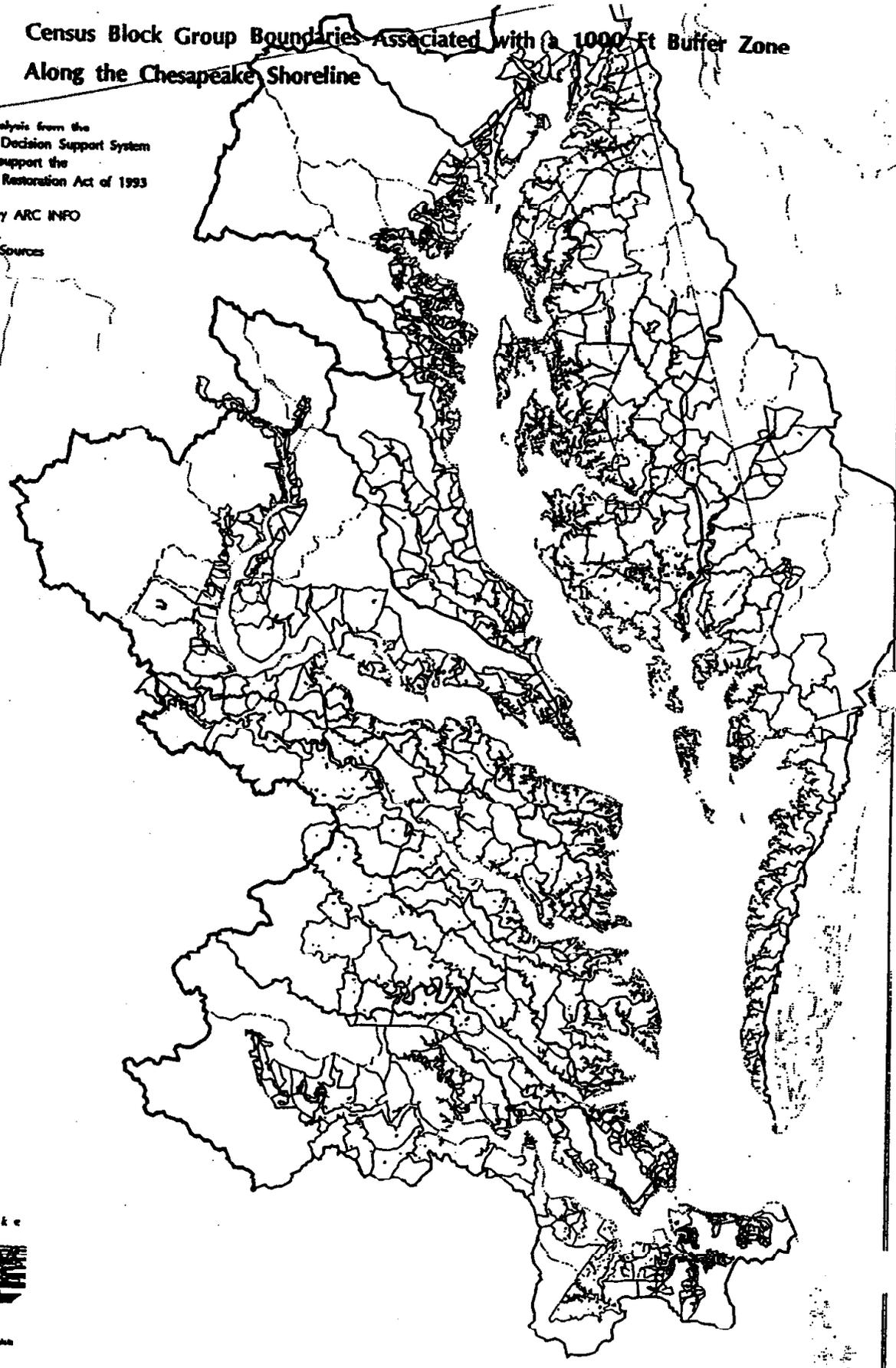


# Figure 8.b Census Block Group Boundaries Associated with a 1000 Ft Buffer Zone Along the Chesapeake Shoreline

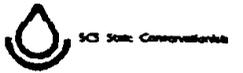
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| Waste Disposal Type |        | TOTAL  | % of Grand Total | Ground Water | % of Grand Total | Surface Water | % of Grand Total | Coastal Zone | % of Grand Total |
|---------------------|--------|--------|------------------|--------------|------------------|---------------|------------------|--------------|------------------|
| Urban               | Total  | 5.232  | 15.6             | 3.608        | 15.2             | 1.280         | 14.6             | 0.344        | 35.6             |
|                     | Septic | 4.902  | 14.6             | 3.374        | 14.2             | 1.197         | 13.7             | 0.331        | 34.3             |
|                     | Other  | 0.330  | 1.0              | 0.234        | 1.0              | 0.083         | 0.9              | 0.013        | 1.3              |
| Rural               | Total  | 26.819 | 80.1             | 19.118       | 80.5             | 7.098         | 81.1             | 0.603        | 62.4             |
|                     | Septic | 25.718 | 76.8             | 18.333       | 77.2             | 6.806         | 77.7             | 0.579        | 59.9             |
|                     | Other  | 1.101  | 3.3              | 0.785        | 3.3              | 0.292         | 3.3              | 0.024        | 2.5              |
| Farm                | Total  | 1.421  | 4.2              | 1.028        | 4.3              | 0.376         | 4.3              | 0.019        | 2.0              |
|                     | Septic | 1.340  | 4.0              | 0.970        | 4.1              | 0.354         | 4.0              | 0.017        | 1.8              |
|                     | Other  | 0.081  | 0.2              | 0.058        | 0.2              | 0.022         | 0.3              | 0.002        | 0.2              |
| Grand Total         |        | 33.472 | 100.0            | 23.754       | 100.0            | 8.754         | 100.0            | 0.966        | 100.0            |

Table E  
Mean Nitrogen Loadings (in millions of pounds) by Housing Unit Type and Waste Disposal Means to Ground Water, Surface Water and the Coastal Zone

**State Summaries: Nitrogen Loadings Partitioning to Ground Water and Surface Water and Direct Loadings to the Coastal Zone**

Table 11 contains summaries by state of minimum, mean and maximum amounts of nitrogen loaded to ground water, surface water and the coastal zone. Loadings by housing unit type using septic and other means of disposal are described in Table 11B-G.

a. *Ranking States by Total Nitrogen Loadings.* While Maryland and Virginia have more housing units in the watershed, more of these housing units are sewered (Table 4). More of Pennsylvania's housing units depend on septic and other means of waste disposal and they also have higher numbers of persons per housing unit of this type, however. This accounts for primacy for Pennsylvania in nitrogen loadings among the Bay states.

*Pennsylvania ranks highest in nitrogen loadings to the watershed (11.19 million pounds per year or 33.4% of the total loaded). Virginia follows with 9.557 million pounds (28.6% of the total) and Maryland ranks third with 8.346 million pounds or 24.9% of the total loaded. Eighty percent of the total nitrogen loaded to the watershed is from rural nonfarm housing units. Thirty-four + percent of the direct loading to the coastal zone shoreline is estimated to be from urban housing units using septic fields.*

b. *Rural Populations Using Septic and Other Means of Disposal.* Rural populations load a total of 26.82 million pounds of nitrogen to the watershed (Table E). Those using septic systems load 25.72 million pounds and those using other means, 1.10 million pounds (Table 11C and 11F). Pennsylvania leads in the former, but Virginia leads in the latter category with 9.506 million pounds (37.9% of the total loaded by housing units with other means of disposal) and 0.424 million pounds (38.5% of the amount loaded by those housing units), respectively.

c. *Urban Populations and Direct Loadings to the Coastal Zone.*

Urban populations are associated with 5.232 million pounds of nitrogen loaded to the watershed (15.6% of the total, *Table E*). Of this, a significant amount (344,000 pounds) is loaded directly to the coastal zone. *Table 11B* shows that Maryland leads the states with 204,763 pounds or 62.0% of the direct loading to the coastal zone. Urban populations using other means of waste disposal load 329,310 pounds of which 12,564 pounds go directly to the coastal zone (*Table 11E*). Again, Maryland leads this loading category (7,324 pounds, or 58% of the total loaded directly to the coastal zone from HUs using other means of waste disposal).

While Pennsylvania and Virginia lead the states in total nitrogen loadings to the watershed, Maryland leads the states in nitrogen loadings directly to the coastal zone (586,842 pounds or 61%) and Virginia follows with 38%. Maryland leads all states in urban, rural and farm populations loading directly to the coastal zone.

- d. *Farm Populations.* Farm populations, representing only 1.2% of the population in 1.0% of the housing (*Table 3*) load a total of 1.42 million pounds of nitrogen (or 4.2% of the total loaded to the watershed (*Table E*)). Pennsylvania leads in nitrogen loadings by this housing type with 582,258 pounds (43% of the total for this category) using septic and 31,881 pounds loaded by farm populations using other means (*Table 11D and 11G*). Of the 996,000 pounds of nitrogen loaded directly to the coastal zone, Farm populations using septic load 17,337 pounds and those using other means load 1,635 pounds or 1.7% and 0.2% respectively, of the total loaded directly to the coastal zone.

County summaries of HU types by state are found in *Table 12*.

## Model Segment Summaries: Nitrogen Loadings, Partitioning to Ground Water and Surface Water and the Coastal Zone

### Nitrogen Loaded

*Table 13* contains listings by Model Segment of nitrogen loadings to surface water, ground water and the coastal zone. By overlaying panels a, b and c of *Figure 7* with the Model Segment boundaries (*Figure 2e*), one can easily spatially apportion source loadings that were used by NCRI in developing these model segment-based source loadings.

- a. *Nitrogen Loadings.* The model segments with the highest total loadings to the mainstem of the Bay watershed are segments 20 – the largest segment, 1.612 million acres – and 10, the East Branch 1 in the Susquehanna Sub-basin. The determined load totals 1.022 million and 2.238 million pounds, respectively. The third and fourth highest model segments 110 and 80 with 1.938 million pounds and 1.304 million pounds of nitrogen loaded respectively and are of smaller size (1.11 million acres and 1.442 million acres). The apportionment of loadings to surface and ground water and the coastal zone are listed in *Table 8A*. They can be easily seen within block groups according to soils boundaries transecting the block groups by overlaying the block group acetate (Methods, *Figure 2c*) onto *Figures 7a, b, and c*. The average rate of loading for the four largest segments is 0.71, 0.63, 1.74 and 0.90 pounds per acre.

The segments with the highest rate of nitrogen loading in the watershed are much smaller in size and they are closely associated with the Chesapeake Bay. They are segments 870 of the Coast 6c segment in the West Chesapeake sub-basin (8.65 lbs/acre, mod seg size: 25,500 acres), the Severn, the Patuxent (mod seg 510 in with 6.51 pounds per acre, mod seg size: 28,839 acres), and the Coast 5 of the Patuxent (mod seg 880 with 3.21 lbs per acre, mod seg size: 111,168 acres).

Certain very small census blocks load nitrogen directly to the coastal zone (*Table 10A*) in the Patuxent (an average of 2.66 lbs/acre, area 1,855 acres) and in the York River in Virginia (2.57 lbs per acre, area 3,510 acres).

- b. *Ground Water and Surface Water Partitioning.* The average potential for partitioning of nitrogen loadings to ground water and surface water according to soils data alone over the watershed is 73.4% to ground water and 26.76 percent to surface water (Table I). The average proportion of septic nitrogen partitioned to ground water is 71% overall and to surface water, it is 26.1% (data not shown). The highest average nitrogen partitioning to ground water is in model segments 230, 235, 240, 250, 260 in the Rappahannock and York River Sub-basins and 310 in the Appomatox with 76.1%, 78.2%, 76.9%, 79.3% and 81.8% respectively. This seems to indicate that housing units are preferentially located on soils with very high relative potentials to affect ground water in these segments particularly. The highest average level of nitrogen partitioning to surface water is in model segments 10, 20, and 30 in the East Branches 1 and 2 of the Susquehanna Sub-basin, 610 and 265 in the James River Sub-basins with 31.6, 32.0, 34.2 and 32.1% respectively, (Table 10A). Other proportions are partitioned among direct loadings to the coastal zone and surface and ground water within 44 Model segments.
- c. *Partitioning Rates to Ground Water and Surface Water.* Figure 9 shows the relative average rates of nitrogen partitioning in pounds per acre per model segment. The highest loading rates (1.37-8.32 pounds per acre) to ground water are in 1.97 million acres in model segments associated with the Upper Chesapeake Bay. The second highest loading rates (0.68-1.37 pounds per acre) are surrounding these segments and within the lower James River Basin. The highest rate of loading to surface water (0.68-1.37 pounds per model segment acre) is in 240,000 acres in model segments 760, the Upper Patapsco and segments 510 and 870 (the Severn and the Coast 6c segments).

## CONCLUSION AND RECOMMENDATIONS

Four new technical approaches have been used in this study:

1. *Modeling Population Statistics to the Block Group Level.* A method for modeling populations and housing statistics used here provided certain data not available at the Census block level. This was useful in that we were able to account for different populations by housing unit type. In addition, though Maryland and Virginia have approximately 1.7 million housing units in the watershed, both states provide sewers to more of their rural housing than does Pennsylvania. Generally, as housing types move from urban to rural and to farm types, the number of persons per housing unit increases. Pennsylvania, on the whole, has more people per housing unit using septic systems than do the other two states. Based on source loading estimates, these two facts advanced Pennsylvania to the lead in nitrogen loadings from septic fields to the watershed.
2. *Using Soils Septic Limitations to Build Ground and Surface Water Potentials for Septic Effluent.* A new simplistic first step has been applied to STATSGO to develop general soils potentials to influence effluent effects on surface water relative to ground water was applied. KARST topography characterizes 9.15 million acres or 23 percent of the watershed and is an important environmental concern with respect to ground water potentials for contamination from many uses. By integrating KARST and geologic data with STATSGO layers, we were also able to geographically localize and quantify this enhanced generalized ground water potential. This method should also apply to potentials for other nitrogen sources including livestock and fertilizer use which NCRI Chesapeake has also documented in cooperation with agencies at USDA. In the latter case, however, the entire soil profile would be used.
3. *Characterizing Physiographic Regions by Relative Surface and Ground Water Potentials in the Watershed.* While by this generalized method, soils in this region still predominantly affect ground

\* This is not to be understood, however, as advocacy of increased sewerage policy in rural Pennsylvania.

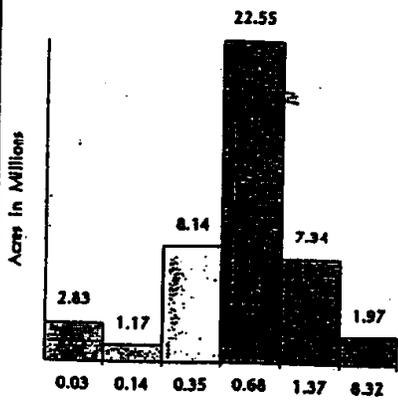
# Nitrogen Loadings (lbs/ac) Partitioned to Ground Water: Average per Model Segment

An Analysis from the  
Chesapeake Bay Decision Support System  
to support the  
Chesapeake Bay Restoration Act of 1993

GIS by ARC INFO

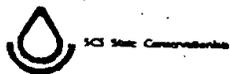
### Sources

The soil information used for this map was NRCS 1994 STATSGO data. STATSGO was compiled at 1:250,000 and designed to be used primarily for regional, multistate, State and river basin resource planning, management and monitoring.



Lbs of Nitrogen per Model Segment per Acre from GW

NCRI Chesapeake



**Figure 9.b**

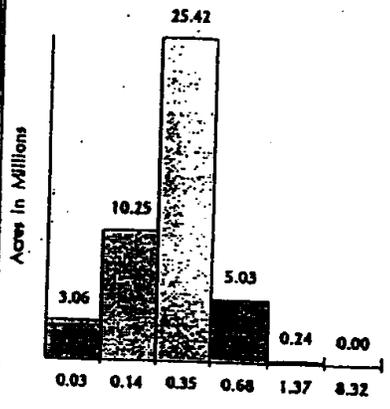
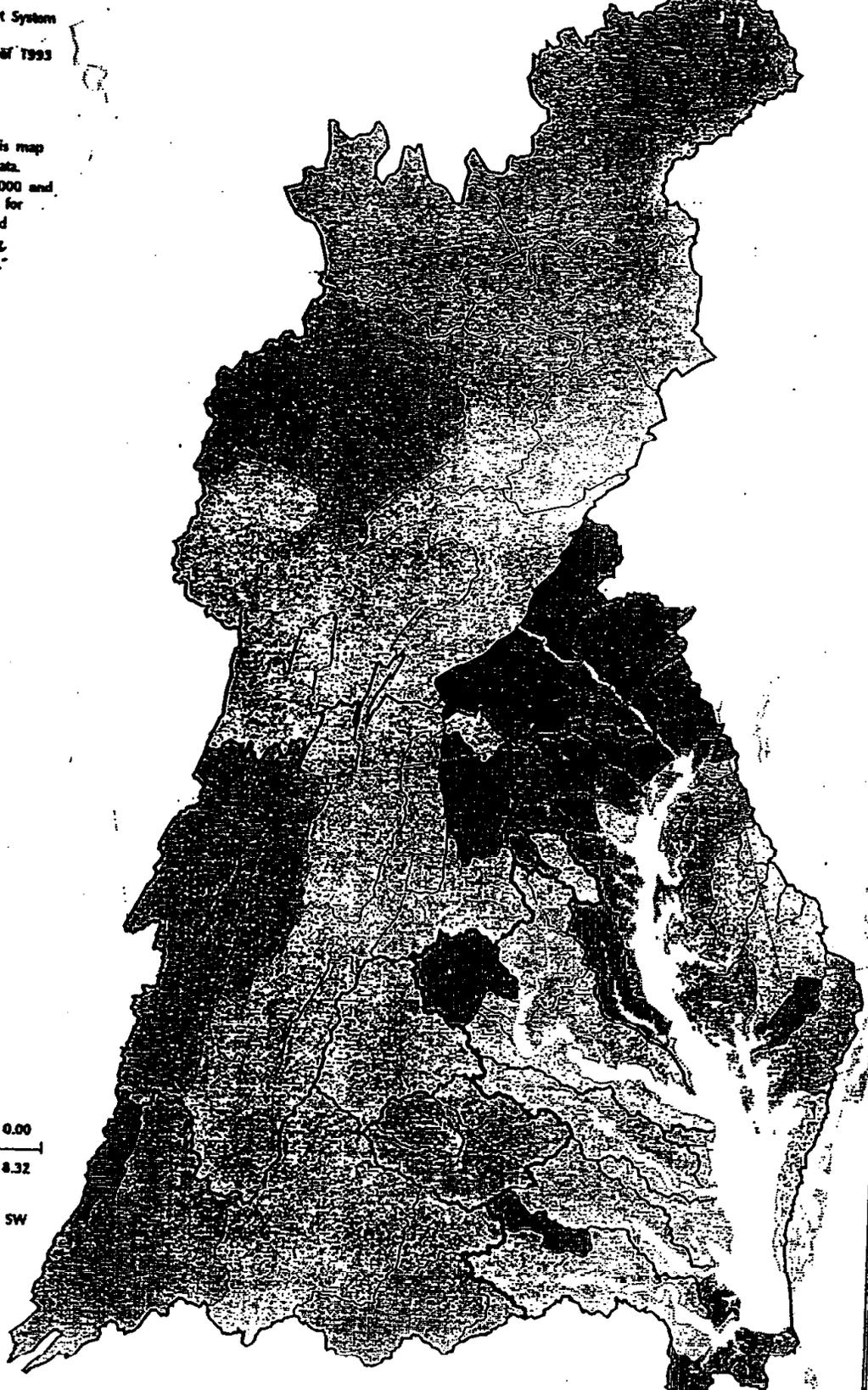
**Nitrogen Loadings (lbs/ac) Partitioned to Surface Water: Average per Model Segment**

An Analysis from the  
Chesapeake Bay Decision Support System  
to support the  
Chesapeake Bay Restoration Act of 1993

GIS by ARC/INFO

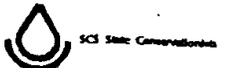
**Sources**

The soil information used for this map  
was NRCS 1994 STATSOO data.  
STATSOO was compiled at 1:250,000 and  
designed to be used primarily for  
regional, multistate, State and  
river basin resource planning,  
management and monitoring.



Lbs of Nitrogen per Modseg per Acre from SW

NCRI Chesapeake

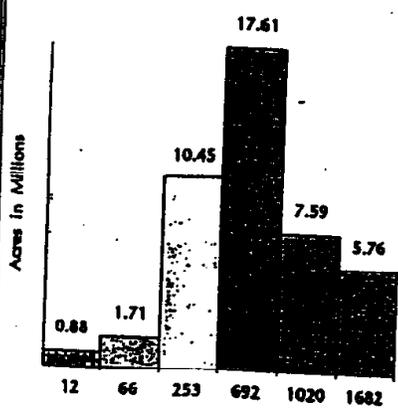
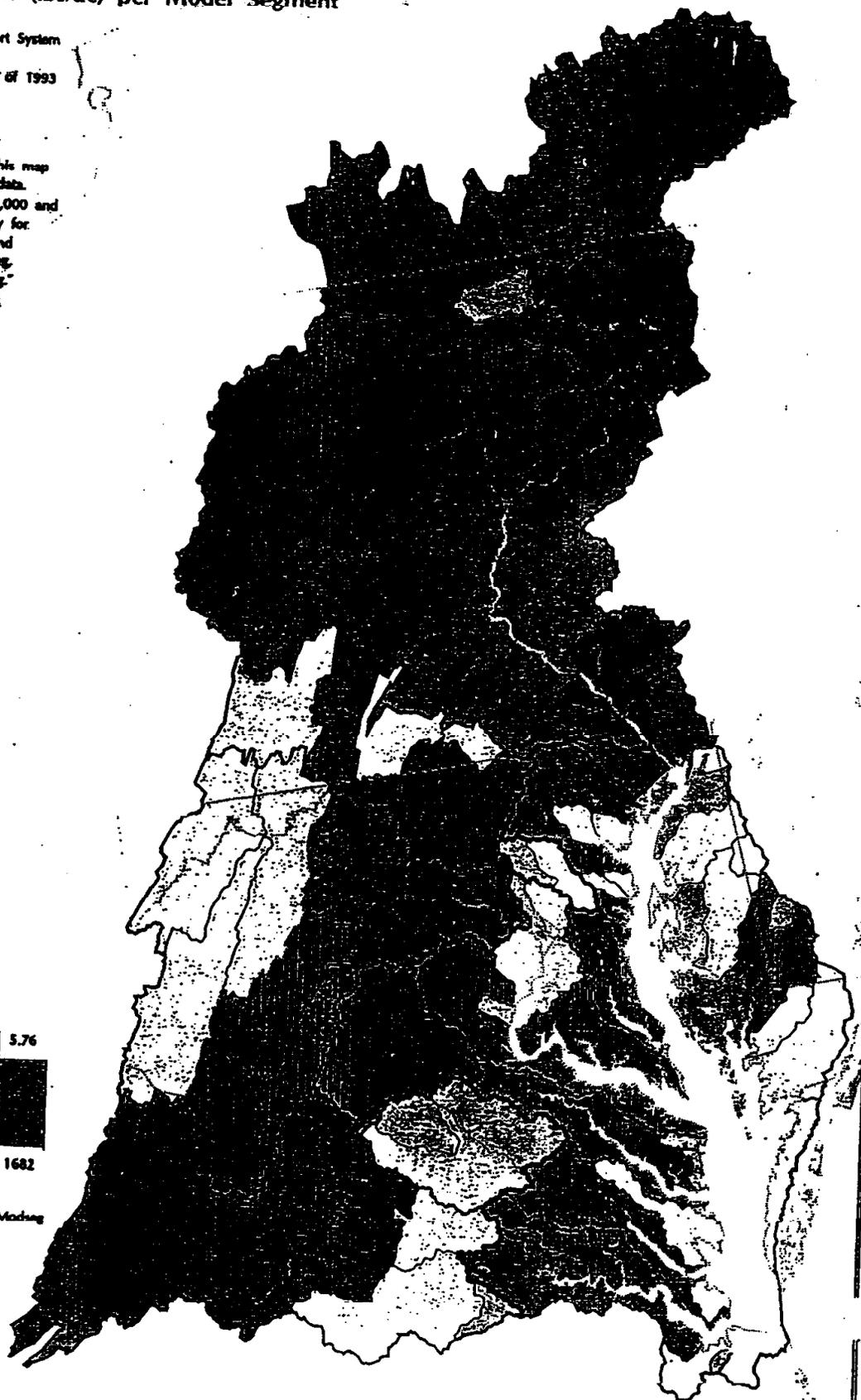


# Transported Nitrogen (lbs/ac) per Model Segment

An Analysis from the  
Chesapeake Bay Decision Support System  
to support the  
Chesapeake Bay Restoration Act of 1993

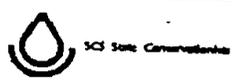
GIS by ARC INFO

**Sources**  
The soil information used for this map  
was NRCS 1994 STATSGO data.  
STATSGO was compiled at 1:250,000 and  
designed to be used primarily for  
regional, multistate, State and  
river basin resource planning,  
management and monitoring.



Transported Lbs ( x 1000 ) of Nitrogen per Model Segment

NCRI Chesapeake



water, several physiographically distinctive regions were delineated in which soils limitations may induce surface water effects on septic effluent. These areas can also be described according to those limitations which may induce certain *kinds of physiographic potentials* such as surface water impacts at times of seasonally high water tables, ponding and flooding. Certain other limitations such as KARST topography associated with a shallow depth to bedrock, high soils permeability and soils containing large stones where there is a potential for enhancing ground water effects. *Of course these data are described on a regional basis and septic field siting is done on an on-site basis. Further, this study does not say that surface or ground water resources are being affected, rather, that there is a potential, in general— absent transport and other processing — that would otherwise reduce levels of soluble nitrogen available for these effects.*

4. *Linking social and economic characteristics of human communities to physical resources.* Techniques used here include modeling households, populations and estimating nutrient loads linked to physical resources on a small area basis. The aggregation of block group/STATSGO intersections to various geographic units including county, model segment, state and entire watershed levels illustrates an hierarchical GIS approach to spatially account for associated resource effects of human populations in the environment.

## Recommendations

Principal findings of this study are outlined in the Executive Summary. The system described here has the potential for broad applications addressing relationships between human communities and their physical environments. In addition, we collected a significant number of published and unpublished technical reports, models and related information in the Literature Review, which should be useful in designing next steps. The following recommendations reflect this:

### *Recommendation 1: Integrating Source Loadings with Water Resources - Identifying Potential Directly Impaired Resources*

- (a) *Identification of Surface Water Bodies with the Potential to be Directly Affected by Source Nutrient Loadings.* Extensive studies related to septic fields have been developed for the Delmarva area and other parts of the watershed.<sup>14</sup> Models have been developed to account for the proximal relationship between septic fields and surface water bodies, that result in hydraulic mounding and impairment of nitrogen processing.<sup>20</sup> In addition to the direct association of septic loadings with the 1,000 foot shoreline buffer area described here, a better-defined spatial association of septic fields through appropriate land use imagery integrated with surface water hydrography would be useful. Incorporating a transport model for edge-of-septic fields to edge of open water at higher levels of geographic precision and utilizing models to predict mounding potentials in high septic density areas would also be very valuable. These steps might assist in (1) accounting for source loadings with a potential for direct impairment of specific kinds of water resources and (2) identifying those surface water bodies. This should be helpful in (1) implementing and prioritizing tributary strategies and (2) tracking results in a coordinated way for the watershed.
- (b) *Modeling and Transport.* Many studies reviewed in this work seem potentially applicable to modeling off-site impacts of septic effluent. Among these is the Cornell model "GWLF"<sup>22</sup> (Generalized Ground Water Loading Factor) which could be applied to transport effluent to surface water bodies on a regional basis. The soils potentials developed here would be useful in such a model. Other transport models can be applied to surface and ground water transport of livestock nutrient could be implemented. Chemical modification/denitrification, etc. based on storage, disposal management and chemical processing of both sources need to be accounted for. Precipitation, topography, land cover,

water holding capacity and condition of soils and other regimes affecting septic performance and effluent transport could be incorporated.

In addition, reliable water quality data, such as that collected by the USGS NAWQA studies could be incorporated into this study in order to draw potential correlations between transport and fate of nutrients. Point source data from sewage treatment sites could also be used.<sup>20</sup> Several reviewers identified in this Literature Search have the expertise to support such an effort. A specialized technical team from federal and state agencies and universities could be used to build consensus about optimal technical approaches given available information.

### *Recommendation 2: Economic Characterization of Housing Units Using Other Means of Waste Disposal in the Watershed - an Alternative Systems Option.*

*Housing units associated with other means of waste disposal.* Among the data collected in the population modeling is information about the economic status of populations and sources of water by housing unit dependent on septic and/or other means of disposal.

Our preliminary analyses show that the 170,000 people depending on other means of waste disposal live in the Delmarva, and southern and southwestern edges of the watershed. They are also close to the poverty level economically. A more thorough analysis of these findings could be used to better economically characterize these populations in the watershed and possibly be useful in finding communities needing economical and feasible solutions using alternative systems.

### *Recommendation 3: Growth Patterns and Land Conversion - Estimating Pollution Potential*

Land conversion to more intensive uses inevitably changes the kind of pollutant potential for all resources. Conversion from agricultural use to low density residential subdivisions on septic fields has been estimated to increase localized nutrient loadings.<sup>9</sup> Land use policies and programs in different states and counties affect growth potentials. In the last ten years, the City of Baltimore has hardly extended beyond its boundaries to the west where Baltimore County has large lot agricultural zoning. Yet, in the same decade, growth has nearly consumed the watershed in Harford County to the north of it. Septic-dependent growth in the upper watersheds feeding the three drinking water reservoirs for Baltimore, however, together with livestock operations appear to be increasing. Some of the land around the reservoirs is protected and some is not.<sup>21</sup>

The fact that twenty-one percent of all housing units in the watershed were built before 1939 has implications for septic field performance and the nature of treatment type such as whether these systems are, in fact, cesspools (if not upgraded). In addition, many new housing developments are preferentially supported by septic systems near water bodies and where wetlands have been converted.<sup>15</sup>

In 1990, the Year 2020 panel recommended a comprehensive analysis of population growth/development patterns in the watershed and several states have formed Growth Management Commissions. None to our knowledge has developed a basin-wide geographic information system that could address this issue for the region.

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<sup>20</sup> Note: The preliminary data assessment of the correlation between water quality and nitrogen from animal manure shows a strong relation between these two variables. For the data collected by the National Water-Quality Assessment Project, the concentrations of nitrate in ground and surface water are strongly correlated with the application of animal manure as calculated by NCRI Chesapeake. These correlations are present whether comparing ground water nitrate concentrations to the amount of manure applied in the sampling area, or surface water nitrate concentrations to the amount of manure applied in the drainage basin. (Bruce Lindsey 1996. PA USGS, Personal Communication.)

Remote sensing data together with TIGER (roads, rivers, transportation corridors, etc.) soils, topographic data and other information can be used to assess land conversion in the past and build rules for urbanization and growth modeling in the future and this could be used to document resource losses and pollution potentials due to resource conversion.

#### *Recommendation 4: Social and Economic Characteristics of Technology Consumers in the Watershed - Fashioning Better Conservation Services*

One of the pilot studies being developed by NCRI for Pennsylvania in another cooperative project seeks to identify conservation practice "adopter" and the "non-adopter" among the farm community.<sup>13</sup> Farming types and social, economic and demographic factors of potential conservation technology consumers -- and thus a better means for marketing conservation technologies -- are being built by NCRI-Chesapeake in Pennsylvania using target marketing techniques developed in the private sector. "Marker" factors -- to be used in models -- are being developed for use in characterizing socio-economic features of human settlements in the study area.

If this study were expanded from the eleven county study area in southern Pennsylvania to the entire Chesapeake watershed, an estimation of the efficacy of this technique would be possible for larger areas and more diverse natural and cultural systems. Results would allow better understanding of the technology consumer. This could lead to better coordination, design and packaging of conservation technical assistance on state and regional levels.

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- <sup>7</sup> 1992 National Resources Inventory, Natural Resources Conservation Service, USDA.
- <sup>8</sup> "Septic Systems Pose a Risk to the Chesapeake". Bay Journal, October, 1992.
- <sup>9</sup> Land Use and Land Cover, Thematic Mapper Imagery. (1990). U.S. EPA Chesapeake Bay Program, 1994.
- <sup>10</sup> Land Use Data Analysis (LUDA). 1972-1984. Aerial Photography. U.S. G.S. GIRAS format coverage.
- <sup>11</sup> 1990 Census of Population and Housing. Summary Tape File 3A, Technical Documentation, Appendix C. "Accuracy of the Data".
- <sup>12</sup> Lynn Schuyler, USEPA, Chesapeake Bay Program, personal communication.
- <sup>13</sup> Haith, D.R., R. Mandel and R.S. Wu (1992). "GWLF" Generalized Watershed Loading Functions, Version 2.0. User's Manual. Department of Agricultural and Biological Engineering, Cornell University, Ithaca, NY.
- <sup>14-32</sup> See Unpublished Technical Documents Section, Literature Review. Including references 1-7, 9, 11-12, 14, 21 and 23 in particular.

SOIL PROPERTIES AFFECTING SEPTIC SUITABILITY

| MUID <sup>1</sup> | KARST FLAG <sup>2</sup> | CRITICAL AREA <sup>3</sup> | SOIL ASSOCIATION               | PERCENT COMPOSITION-WEIGHTED LIMITATION <sup>4</sup> |         |         |        |        |       |       |                    |          |          | LIMITATION <sup>5</sup> |          |          | PERCENT        |         | ACRES <sup>6</sup> |
|-------------------|-------------------------|----------------------------|--------------------------------|--|---------|---------|--------|--------|-------|-------|--------------------|----------|----------|-------------------------|----------|----------|----------------|---------|--------------------|
|                   |                         |                            |                                | SUBTOT   | ANFLOOD | ROCKDIP | PANDEP | PRDDEP | WTDEP | SLOPE | INCH <sup>11</sup> | PERM1460 | PERM1440 | 1                       | 2        | 3        | GROUND SURFACE |         |                    |
|                   |                         |                            |                                |  |         |         |        |        |       |       |                    |          |          |                         |          |          | PERCENT        | PERCENT |                    |
| D0001             | N                       | N                          | EVEBORO-KEMANSVILLE-FALLSNOTON | 0  | NONE    | 60.00   | 99.00  | 0.02   | 4.08  | 1.20  | 0.00               | 1.00     | 1.10     |                         |          |          | 76.70          | 31.30   | 124,093            |
| D0002             | N                       | Y                          | EVEBORO-KEMANSVILLE-FALLSNOTON | 0  | NONE    | 60.00   | 99.00  | 0.02   | 4.08  | 1.20  | 0.00               | 1.00     | 1.10     | PNDDEP                  |          |          | 75.50          | 34.50   | 674                |
| D0003             | N                       | N                          | POCOMOKE-WOODSTOWN-EVEBORO     | 0  | NONE    | 60.00   | 99.00  | -0.15  | 2.09  | 1.13  | 0.00               | 1.92     | 1.11     | WTDEP                   |          |          | 77.40          | 22.60   | 8,459              |
| D0004             | N                       | N                          | SASSAFRAS-RUNFORD-FALLSNOTON   | 0  | NONE    | 59.00   | 99.00  | 0.01   | 5.77  | 1.94  | 0.00               | 1.39     | 0.39     | PERM1460                | PNDDEP   |          | 78.30          | 21.70   | 1,629              |
| D0005             | N                       | N                          | NATAPEAKE-OTHELLO-SASSAFRAS    | 0  | NONE    | 60.00   | 99.00  | 0.01   | 4.44  | 3.07  | 0.00               | 1.73     | 0.39     | PNDDEP                  |          |          | 78.60          | 31.40   | 16,235             |
| D0006             | N                       | Y                          | NATAPEAKE-OTHELLO-SASSAFRAS    | 0  | NONE    | 60.00   | 99.00  | 0.01   | 4.44  | 3.07  | 0.00               | 1.73     | 0.39     | PNDDEP                  |          |          | 76.50          | 23.50   | 526                |
| D0007             | N                       | N                          | WOODSTOWN-SASSAFRAS-FALLSNOTON | 0  | NONE    | 57.00   | 99.00  | 0.01   | 2.12  | 2.43  | 0.00               | 1.33     | 0.17     | WTDEP                   | PERM1460 | PNDDEP   | 72.90          | 27.10   | 4,137              |
| D0008             | N                       | N                          | SASSAFRAS-DOWNER-WOODSTOWN     | 0  | NONE    | 60.00   | 99.00  | 0.00   | 4.4   | 2.87  | 0.10               | 1.00     | 2.00     |                         |          |          | 79.00          | 20.00   | 36,406             |
| D0009             | N                       | N                          | FALLSNOTON-POCOMOKE-WOODSTOWN  | 0  | NONE    | 60.00   | 99.00  | -0.13  | 2.14  | 1.45  | 0.05               | 1.19     | 1.00     | WTDEP                   |          |          | 73.00          | 23.00   | 9,322              |
| D0010             | N                       | N                          | POCOMOKE-BENNYLAND-PLUMMER     | 0.5  | NONE    | 60.00   | 99.00  | -0.13  | 1.12  | 1.35  | 0.00               | 1.20     | 2.71     | WTDEP                   |          |          | 77.00          | 22.00   | 48,421             |
| D0011             | N                       | Y                          | POCOMOKE-BENNYLAND-PLUMMER     | 0.5  | NONE    | 60.00   | 99.00  | -0.13  | 1.12  | 1.35  | 0.00               | 1.20     | 2.71     | WTDEP                   |          |          | 70.70          | 29.30   | 44                 |
| D0012             | N                       | N                          | PORFOLK-ELKTON-WOODSTOWN       | 0  | NONE    | 60.00   | 99.00  | 0.00   | 2.1   | 1.45  | 0.03               | 1.93     | 0.9      | WTDEP                   |          |          | 74.00          | 25.00   | 11,850             |
| D0013             | N                       | N                          | FALLSNOTON-WOODSTOWN-SASSAFRAS | 0  | NONE    | 60.00   | 99.00  | -0.05  | 2.71  | 1.40  | 0.00               | 1.94     | 1.46     | WTDEP                   |          |          | 74.70          | 25.30   | 147,948            |
| D0014             | N                       | N                          | GALESTOWN-EVEBORO-POCOMOKE     | 0  | NONE    | 60.00   | 99.00  | -0.04  | 4.0   | 3.04  | 0.45               | 1.74     | 0.40     |                         |          |          | 77.70          | 22.30   | 25,631             |
| D0015             | N                       | Y                          | GALESTOWN-EVEBORO-POCOMOKE     | 0  | NONE    | 60.00   | 99.00  | -0.04  | 4.0   | 3.04  | 0.45               | 1.74     | 0.40     |                         |          |          | 76.10          | 23.90   | 3,399              |
| D0016             | N                       | N                          | POCOMOKE-PANLICO-JOHNSTON      | 4.30   | NONE    | 60.00   | 99.00  | -0.16  | 0.70  | 0.90  | 0.00               | 1.51     | 3.2      | WTDEP                   |          |          | 78.10          | 21.90   | 12,177             |
| D0017             | N                       | N                          | HEBAMINY-LEITCH-OLNEYLO        | 0  | NONE    | 60.00   | 99.00  | 0.00   | 3.13  | 0.36  | 5.92               | 1.91     | 0.00     | WTDEP                   |          |          | 80.40          | 19.60   | 170                |
| D0018             | N                       | N                          | NATAPEAKE-KEYPORT-ELKTON       | 0  | NONE    | 53.50   | 99.00  | 0.01   | 3.1   | 2.74  | 0.15               | 1.92     | 0.31     | WTDEP                   | PNDDEP   |          | 73.00          | 27.00   | 421                |
| DELAWARE AVERAGE  |                         |                            |                                | 0.30   |         | 59.55   | 99.00  | -0.04  | 3.0   | 2.36  | 0.40               | 1.73     | 1.07     |                         |          |          | 76.43          | 23.57   | 454,540            |
| DELAWARE TOTAL    |                         |                            |                                |  |         |         |        |        |       |       |                    |          |          |                         |          |          |                |         |                    |
| M0001             | N                       | N                          | BELTSVILLE-CROOM-SASSAFRAS     | 0  | NONE    | 59.00   | 99.00  | 0.00   | 4.46  | 12.00 | 0.30               | 1.29     | 0.00     |                         |          |          | 73.00          | 25.00   | 273,026            |
| M0002             | N                       | Y                          | BELTSVILLE-CROOM-SASSAFRAS     | 0  | NONE    | 59.00   | 99.00  | 0.00   | 4.46  | 12.00 | 0.30               | 1.29     | 0.00     |                         |          |          | 71.40          | 28.60   | 3,483              |
| M0003             | Y                       | N                          | BELTSVILLE-CROOM-SASSAFRAS     | 0  | NONE    | 59.00   | 99.00  | 0.00   | 4.46  | 12.00 | 0.30               | 1.29     | 0.00     |                         |          |          | 71.60          | 28.40   | 113                |
| M0004             | Y                       | Y                          | BELTSVILLE-CROOM-SASSAFRAS     | 0  | NONE    | 59.00   | 99.00  | 0.00   | 4.46  | 12.00 | 0.30               | 1.29     | 0.00     |                         |          |          | 71.60          | 28.40   | 21.6               |
| M0005             | N                       | N                          | BELTSVILLE-CROOM-LEONARDTOWN   | 0  | NONE    | 54.41   | 99.00  | 0.00   | 3.0   | 4.48  | 0.20               | 1.46     | 0.17     | WTDEP                   |          |          | 75.50          | 24.50   | 255,903            |
| M0006             | N                       | Y                          | BELTSVILLE-CROOM-LEONARDTOWN   | 0  | NONE    | 54.41   | 99.00  | 0.00   | 3.0   | 4.48  | 0.20               | 1.46     | 0.17     | WTDEP                   |          |          | 73.10          | 26.90   | 413                |
| M0007             | N                       | N                          | WESTBROOK-IFWICH-ELKTON        | 0  | FREQ    | 60.00   | 99.00  | -0.40  | 0.70  | 0.50  | 0.00               | 1.02     | 0.02     | ANFLOOD                 | WTDEP    | PERM1460 | 62.50          | 37.50   | 116,302            |
| M0008             | N                       | Y                          | WESTBROOK-IFWICH-ELKTON        | 0  | FREQ    | 60.00   | 99.00  | -0.40  | 0.70  | 0.50  | 0.00               | 1.02     | 0.02     | ANFLOOD                 | WTDEP    | PERM1460 | 62.50          | 37.50   | 41,416             |
| M0009             | N                       | N                          | BBB-GALESTOWN-MANAJAWKIN       | 2.25   | FREQ    | 60.00   | 99.00  | -0.07  | 1.46  | 1.26  | 1.13               | 1.10     | 0.00     | ANFLOOD                 | WTDEP    |          | 64.00          | 33.00   | 97,237             |
| M0010             | N                       | Y                          | BBB-GALESTOWN-MANAJAWKIN       | 2.25   | FREQ    | 60.00   | 99.00  | -0.07  | 1.46  | 1.26  | 1.13               | 1.10     | 0.00     | ANFLOOD                 | WTDEP    |          | 64.90          | 33.10   | 4,331              |
| M0011             | N                       | N                          | OTHELLO-ELKTON-MATTAPEX        | 0  | NONE    | 60.00   | 99.00  | -0.01  | 1.59  | 1.54  | 0.00               | 1.15     | 0.11     | WTDEP                   |          |          | 74.50          | 23.50   | 549,513            |
| M0012             | N                       | Y                          | OTHELLO-ELKTON-MATTAPEX        | 0  | NONE    | 60.00   | 99.00  | -0.01  | 1.59  | 1.54  | 0.00               | 1.15     | 0.11     | WTDEP                   |          |          | 70.90          | 29.10   | 106,916            |
| M0013             | Y                       | Y                          | OTHELLO-ELKTON-MATTAPEX        | 0  | NONE    | 60.00   | 99.00  | -0.01  | 1.59  | 1.54  | 0.00               | 1.15     | 0.11     | WTDEP                   |          |          | 70.90          | 29.10   | 3,200              |
| M0014             | N                       | N                          | WESTPHALIA-MARR-SASSAFRAS      | 0  | NONE    | 56.50   | 99.00  | -0.01  | 3.39  | 14.66 | 0.10               | 1.05     | 0.00     | WTDEP                   |          |          | 70.90          | 29.10   | 1,004              |
| M0015             | N                       | Y                          | WESTPHALIA-MARR-SASSAFRAS      | 0  | NONE    | 56.50   | 99.00  | -0.01  | 3.39  | 14.66 | 0.10               | 1.05     | 0.00     | WTDEP                   |          |          | 73.50          | 26.50   | 209,001            |
| M0016             | N                       | N                          | SUNNYSIDE-CHRISTIANA-MURKIRK   | 0  | NONE    | 55.00   | 99.00  | 0.00   | 4.61  | 7.28  | 0.26               | 1.00     | 0.47     |                         |          |          | 77.20          | 22.80   | 2,639              |
| M0017             | N                       | Y                          | SUNNYSIDE-CHRISTIANA-MURKIRK   | 0  | NONE    | 55.00   | 99.00  | 0.00   | 4.61  | 7.28  | 0.26               | 1.00     | 0.47     |                         |          |          | 77.40          | 22.60   | 106,948            |
| M0018             | Y                       | N                          | SUNNYSIDE-CHRISTIANA-MURKIRK   | 0  | NONE    | 55.00   | 99.00  | 0.00   | 4.61  | 7.28  | 0.26               | 1.00     | 0.47     |                         |          |          | 73.70          | 26.30   | 7,716              |
| M0019             | N                       | N                          | COLLINGTON-MARLTON-URBANLAND   | 0  | NONE    | 55.00   | 99.00  | 0.00   | 4.41  | 11.74 | 0.00               | 1.00     | 0.00     |                         |          |          | 74.70          | 25.30   | 679                |
| M0020             | N                       | Y                          | COLLINGTON-MARLTON-URBANLAND   | 0  | NONE    | 55.00   | 99.00  | 0.00   | 4.41  | 11.74 | 0.00               | 1.00     | 0.00     |                         |          |          | 70.00          | 30.00   | 92,676             |
| M0021             | Y                       | N                          | COLLINGTON-MARLTON-URBANLAND   | 0  | NONE    | 55.00   | 99.00  | 0.00   | 4.41  | 11.74 | 0.00               | 1.00     | 0.00     |                         |          |          | 71.00          | 29.00   | 11,227             |
| M0022             | Y                       | Y                          | COLLINGTON-MARLTON-URBANLAND   | 0  | NONE    | 55.00   | 99.00  | 0.00   | 4.41  | 11.74 | 0.00               | 1.00     | 0.00     |                         |          |          | 72.00          | 28.00   | 3                  |
| M0023             | N                       | N                          | GALESTOWN-EVEBORO-POCOMOKE     | 0  | NONE    | 60.00   | 99.00  | -0.04  | 4.30  | 3.04  | 0.45               | 0.74     | 0.40     |                         |          |          | 72.00          | 28.00   | 379                |
| M0024             | N                       | Y                          | GALESTOWN-EVEBORO-POCOMOKE     | 0  | NONE    | 60.00   | 99.00  | -0.04  | 4.30  | 3.04  | 0.45               | 0.74     | 0.40     |                         |          |          | 77.70          | 22.30   | 113,334            |
| M0025             | N                       | N                          | SASSAFRAS-WESTPHALIA-EVEBORO   | 0  | NONE    | 60.00   | 99.00  | -0.01  | 5.30  | 19.17 | 0.15               | 0.00     | 0.00     | PERM1460                | SLOPE    |          | 74.10          | 23.90   | 10,464             |
| M0026             | N                       | Y                          | SASSAFRAS-WESTPHALIA-EVEBORO   | 0  | NONE    | 60.00   | 99.00  | -0.01  | 5.30  | 19.17 | 0.15               | 0.00     | 0.00     | PERM1460                | SLOPE    |          | 73.30          | 26.70   | 57,701             |
| M0027             | N                       | N                          | MANOR-OLENELO-CHESTER          | 0  | NONE    | 59.31   | 99.00  | 0.00   | 3.31  | 12.23 | 3.35               | 0.09     | 0.00     |                         |          |          | 73.30          | 26.70   | 4,797              |
| M0028             | N                       | Y                          | MANOR-OLENELO-CHESTER          | 0  | NONE    | 59.31   | 99.00  | 0.00   | 3.31  | 12.23 | 3.35               | 0.09     | 0.00     |                         |          |          | 73.40          | 26.60   | 609,644            |
| M0029             | Y                       | N                          | MANOR-OLENELO-CHESTER          | 0  | NONE    | 59.31   | 99.00  | 0.00   | 3.31  | 12.23 | 3.35               | 0.09     | 0.00     |                         |          |          | 74.60          | 25.40   | 1,416              |
| M0030             | N                       | N                          | SASSAFRAS-DOWNER-WOODSTOWN     | 0  | NONE    | 60.00   | 99.00  | 0.00   | 4.14  | 2.87  | 0.10               | 2.00     | 2.00     |                         |          |          | 73.20          | 26.80   | 7,870              |
| M0031             | N                       | Y                          | SASSAFRAS-DOWNER-WOODSTOWN     | 0  | NONE    | 60.00   | 99.00  | 0.00   | 4.14  | 2.87  | 0.10               | 2.00     | 2.00     |                         |          |          | 79.60          | 20.40   | 267,529            |
| M0032             | N                       | N                          | OLPIN-DEKALB-COOKPORT          | 0  | NONE    | 60.00   | 99.00  | 0.00   | 4.87  | 20.34 | 13.09              | 3.25     | 3.11     |                         |          |          | 73.30          | 26.70   | 8,131              |
| M0033             | N                       | N                          | OLPIN-DEKALB-COOKPORT          | 0  | NONE    | 60.00   | 99.00  | 0.00   | 4.87  | 20.34 | 13.09              | 3.25     | 3.11     | ROCKDEP                 | SLOPE    |          | 73.90          | 26.10   | 136,645            |
| M0034             | Y                       | N                          | OLPIN-DEKALB-COOKPORT          | 0  | NONE    | 60.00   | 99.00  | 0.00   | 4.87  | 20.34 | 13.09              | 3.25     | 3.11     | ROCKDEP                 | SLOPE    |          | 70.00          | 30.00   | 2,753              |
| M0035             | N                       | N                          | DEKALB-CALVIN-COOKPORT         | 0  | NONE    | 49.50   | 99.00  | 0.00   | 4.71  | 12.51 | 11.00              | 3.33     | 3.33     |                         |          |          | 77.00          | 23.00   | 26,021             |

Table 1

### SOIL PROPERTIES AFFECTING SEPTIC SUITABILITY

| MUID <sup>1</sup> | KARST FLAG <sup>2</sup> | CRITICAL AREA <sup>3</sup> | SOIL ASSOCIATION                 | PERCENT COMPOSITION-WEIGHTED LIMITATION <sup>4</sup> |         |         |        |        |       |       |       |          |          |                         | LIMITATION <sup>5</sup> |   |        | PERCENT |            | ACRES <sup>6</sup> |
|-------------------|-------------------------|----------------------------|----------------------------------|--|---------|---------|--------|--------|-------|-------|-------|----------|----------|-------------------------|-------------------------|---|--------|---------|------------|--------------------|
|                   |                         |                            |                                  | SUBTOT   | ANFLOOD | ROCKDEP | PANDEP | PNDDEP | WTDEP | SLOPE | INCH3 | PERM2440 | PERM2440 | LIMITATION <sup>5</sup> |                         |   | GROUND | SURFACE |            |                    |
|                   |                         |                            |                                  |  |         |         |        |        |       |       |       |          |          | 1                       | 2                       | 3 |        |         |            |                    |
| MD017             | N                       | N                          | DEKALB-MECKESVILLE-OLDFIN        | 0  | NONE    | 36.34   | 99.00  | 0.00   | 5.31  | 29.11 | 16.00 | 6.07     | 5.09     |                         |                         |   |        |         |            |                    |
| MD019             | N                       | N                          | ALLEBOHNY-POPE-PIELO             | 0  | NONE    | 32.60   | 99.00  | 0.00   | 4.13  | 5.39  | 1.16  | 0.96     | 0.00     | ROCKDEP                 | SLOPE                   |   | 75.30  | 31.00   | 29,725.46  |                    |
| MD019             | Y                       | N                          | ALLEBOHNY-POPE-PIELO             | 0  | NONE    | 32.60   | 99.00  | 0.00   | 4.13  | 5.39  | 1.16  | 0.96     | 0.00     |                         |                         |   | 72.30  | 27.00   | 206,116.40 |                    |
| MD020             | N                       | N                          | WESTMORELAND-EDON-OPEQUON        | 0  | NONE    | 42.61   | 99.00  | 0.00   | 4.13  | 5.39  | 1.16  | 0.86     | 0.00     |                         |                         |   | 76.90  | 29.10   | 6,976.74   |                    |
| MD020             | Y                       | N                          | WESTMORELAND-EDON-OPEQUON        | 0  | NONE    | 42.61   | 99.00  | 0.00   | 5.36  | 14.95 | 4.77  | 0.75     | 0.00     |                         |                         |   | 76.30  | 23.70   | 5,911.43   |                    |
| MD021             | N                       | N                          | ELLISBORO-OPEQUON-FRANKSTOWN     | 0  | NONE    | 49.82   | 99.00  | 0.00   | 5.36  | 23.64 | 10.41 | 0.66     | 0.00     |                         |                         |   | 73.30  | 26.70   | 43,379.94  |                    |
| MD021             | Y                       | N                          | ELLISBORO-OPEQUON-FRANKSTOWN     | 0  | NONE    | 49.82   | 99.00  | 0.00   | 5.56  | 23.64 | 10.41 | 0.66     | 0.00     | SLOPE                   |                         |   | 71.90  | 28.10   | 29,317.15  |                    |
| MD022             | N                       | N                          | HAZLETON-DEKALB-BUCHANAN         | 0  | NONE    | 45.00   | 99.00  | 0.00   | 4.84  | 22.98 | 19.91 | 4.16     | 1.00     | SLOPE                   |                         |   | 71.00  | 28.20   | 12,170.00  |                    |
| MD022             | Y                       | N                          | HAZLETON-DEKALB-BUCHANAN         | 0  | NONE    | 45.00   | 99.00  | 0.00   | 4.84  | 22.98 | 19.91 | 4.16     | 1.00     | SLOPE                   |                         |   | 75.00  | 24.00   | 44,078.93  |                    |
| MD024             | N                       | N                          | BERKS-VEIKERT-BEDINGTON          | 0  | NONE    | 34.35   | 99.00  | 0.00   | 5.21  | 17.11 | 10.34 | 1.73     | 1.34     | SLOPE                   |                         |   | 69.10  | 26.90   | 18,110.09  |                    |
| MD024             | Y                       | N                          | BERKS-VEIKERT-BEDINGTON          | 0  | NONE    | 34.35   | 99.00  | 0.00   | 5.21  | 17.11 | 10.34 | 1.73     | 1.34     | ROCKDEP                 | SLOPE                   |   | 72.90  | 27.10   | 139,053.50 |                    |
| MD023             | N                       | N                          | LECK KIL-CALVIN-KLINESVILLE      | 0  | NONE    | 37.00   | 99.00  | 0.00   | 5.59  | 22.80 | 6.10  | 2.36     | 1.32     | ROCKDEP                 | SLOPE                   |   | 74.30  | 25.70   | 41,440.91  |                    |
| MD026             | N                       | N                          | MURRILL-FRANKSTOWN-POPE          | 0  | NONE    | 58.60   | 99.00  | 0.00   | 3.94  | 5.71  | 2.13  | 0.09     | 0.00     | ROCKDEP                 | SLOPE                   |   | 74.60  | 25.00   | 5,803.48   |                    |
| MD026             | Y                       | N                          | MURRILL-FRANKSTOWN-POPE          | 0  | NONE    | 58.60   | 99.00  | 0.00   | 3.94  | 5.71  | 2.13  | 0.09     | 0.00     | PERM2440                |                         |   | 79.70  | 26.30   | 8,509.69   |                    |
| MD027             | N                       | N                          | HAGERSTOWN-DUFFIELD-CLARKSBURG   | 0  | NONE    | 69.62   | 99.00  | 0.00   | 5.33  | 6.85  | 2.64  | 0.16     | 0.00     | PERM2440                |                         |   | 79.00  | 21.00   | 11,728.60  |                    |
| MD027             | Y                       | N                          | HAGERSTOWN-DUFFIELD-CLARKSBURG   | 0  | NONE    | 69.62   | 99.00  | 0.00   | 5.33  | 6.85  | 2.64  | 0.16     | 0.00     | PERM2440                |                         |   | 77.00  | 22.20   | 24,818.69  |                    |
| MD028             | N                       | N                          | WAYNESBORO-HAGERSTOWN-HUNTINGTON | 0  | NONE    | 61.17   | 99.00  | 0.00   | 5.90  | 9.49  | 2.47  | 0.00     | 0.00     | PERM2440                |                         |   | 77.00  | 22.20   | 149,810.00 |                    |
| MD028             | Y                       | N                          | WAYNESBORO-HAGERSTOWN-HUNTINGTON | 0  | NONE    | 61.17   | 99.00  | 0.00   | 5.90  | 9.49  | 2.47  | 0.00     | 0.00     | PERM2440                |                         |   | 78.00  | 21.60   | 11,416.90  |                    |
| MD029             | N                       | N                          | MESHAMMY-LEHIGH-OLENELO          | 0  | NONE    | 60.47   | 99.00  | 0.00   | 3.83  | 8.34  | 5.92  | 0.91     | 0.00     | PERM2440                |                         |   | 78.00  | 21.60   | 9,130.48   |                    |
| MD029             | Y                       | N                          | MESHAMMY-LEHIGH-OLENELO          | 0  | NONE    | 60.47   | 99.00  | 0.00   | 3.83  | 8.34  | 5.92  | 0.91     | 0.00     | WTDEP                   |                         |   | 80.00  | 19.00   | 147,035.20 |                    |
| MD029             | Y                       | N                          | MESHAMMY-LEHIGH-OLENELO          | 0  | NONE    | 60.47   | 99.00  | 0.00   | 3.83  | 8.34  | 5.92  | 0.91     | 0.00     | WTDEP                   |                         |   | 73.00  | 26.11   | 236.62     |                    |
| MD030             | N                       | N                          | CHROME-COCONOWINGO-MESHAMMY      | 0  | NONE    | 34.35   | 99.00  | 0.00   | 5.39  | 13.82 | 6.38  | 1.16     | 0.82     | ROCKDEP                 |                         |   | 73.00  | 26.11   | 2,475.69   |                    |
| MD030             | Y                       | N                          | CHROME-COCONOWINGO-MESHAMMY      | 0  | NONE    | 34.35   | 99.00  | 0.00   | 5.39  | 13.82 | 6.38  | 1.16     | 0.82     | ROCKDEP                 |                         |   | 77.00  | 23.00   | 17,371.42  |                    |
| MD031             | N                       | N                          | CHRESTE-OLENELO-MAJOR            | 0  | NONE    | 58.05   | 99.00  | 0.00   | 4.97  | 9.73  | 4.20  | 0.26     | 0.00     | PERM2440                |                         |   | 75.00  | 24.01   | 90.8       |                    |
| MD031             | Y                       | N                          | CHRESTE-OLENELO-MAJOR            | 0  | NONE    | 58.05   | 99.00  | 0.00   | 4.97  | 9.73  | 4.20  | 0.26     | 0.00     | PERM2440                |                         |   | 75.50  | 24.50   | 366,137.60 |                    |
| MD032             | N                       | N                          | MT. AIRY-OLENELO-LINGANORE       | 0  | NONE    | 38.28   | 99.00  | 0.00   | 5.48  | 10.96 | 6.80  | 0.30     | 0.02     | ROCKDEP                 | PERM2440                |   | 76.00  | 24.00   | 131.70     |                    |
| MD032             | Y                       | N                          | MT. AIRY-OLENELO-LINGANORE       | 0  | NONE    | 38.28   | 99.00  | 0.00   | 5.48  | 10.96 | 6.80  | 0.30     | 0.02     | ROCKDEP                 | PERM2440                |   | 79.00  | 26.00   | 113,260.90 |                    |
| MD033             | N                       | N                          | COMBESTOON-BALTIMORE-MAJOR       | 0  | NONE    | 58.90   | 99.00  | 0.00   | 5.28  | 7.28  | 4.04  | 0.46     | 0.00     | ROCKDEP                 | PERM2440                |   | 75.00  | 23.00   | 105,741.60 |                    |
| MD033             | Y                       | N                          | COMBESTOON-BALTIMORE-MAJOR       | 0  | NONE    | 58.90   | 99.00  | 0.00   | 5.28  | 7.28  | 4.04  | 0.46     | 0.00     | PERM2440                |                         |   | 77.00  | 23.00   | 33,281.27  |                    |
| MD035             | N                       | N                          | FAUQUIER-MYERSVILLE-HOEFIELD     | 0  | NONE    | 45.44   | 99.00  | 0.00   | 5.60  | 13.41 | 4.38  | 1.42     | 0.00     | PERM2440                |                         |   | 76.50  | 23.50   | 9,233.04   |                    |
| MD035             | Y                       | N                          | FAUQUIER-MYERSVILLE-HOEFIELD     | 0  | NONE    | 45.44   | 99.00  | 0.00   | 5.60  | 13.41 | 4.38  | 1.42     | 0.00     |                         |                         |   | 82.00  | 17.20   | 58,261.07  |                    |
| MD036             | N                       | N                          | BRADDOCK-THURMONT-EDGE MONT      | 0  | NONE    | 54.51   | 99.00  | 0.00   | 4.96  | 8.48  | 4.42  | 1.03     | 0.09     |                         |                         |   | 76.10  | 23.90   | 8,441.34   |                    |
| MD036             | Y                       | N                          | BRADDOCK-THURMONT-EDGE MONT      | 0  | NONE    | 54.51   | 99.00  | 0.00   | 4.96  | 8.48  | 4.42  | 1.03     | 0.09     |                         |                         |   | 79.20  | 20.80   | 20,742.73  |                    |
| MD037             | N                       | N                          | EDGE MONT-MAJOR-MT. AIRY         | 0  | NONE    | 54.68   | 99.00  | 0.00   | 5.85  | 10.99 | 7.06  | 2.01     | 0.00     |                         |                         |   | 74.50  | 23.70   | 3,021.96   |                    |
| MD037             | Y                       | N                          | EDGE MONT-MAJOR-MT. AIRY         | 0  | NONE    | 54.68   | 99.00  | 0.00   | 5.85  | 10.99 | 7.06  | 2.01     | 0.00     | SLOPE                   |                         |   | 71.50  | 20.00   | 20,412.44  |                    |
| MD038             | N                       | N                          | MYERSVILLE-FAUQUIER-CODORUS      | 0  | NONE    | 47.50   | 99.00  | 0.00   | 5.82  | 10.50 | 2.09  | 1.40     | 0.00     | SLOPE                   |                         |   | 74.30  | 23.70   | 16,002.50  |                    |
| MD039             | N                       | N                          | CIANDLER-ATHOL-EDGE MONT         | 0  | NONE    | 65.72   | 99.00  | 0.00   | 5.04  | 6.70  | 7.53  | 0.84     | 0.07     |                         |                         |   | 84.70  | 15.20   | 681.82     |                    |
| MD039             | Y                       | N                          | CIANDLER-ATHOL-EDGE MONT         | 0  | NONE    | 65.72   | 99.00  | 0.00   | 5.04  | 6.70  | 7.53  | 0.84     | 0.07     | SLOPE                   |                         |   | 71.90  | 24.50   | 7,492.31   |                    |
| MD040             | N                       | N                          | FALLSINTON-POCOMOKE-WOODSTOWN    | 0  | NONE    | 60.00   | 99.00  | 0.00   | 2.04  | 1.45  | 0.05  | 1.19     | 1.00     | SLOPE                   |                         |   | 71.00  | 23.00   | 3,618.03   |                    |
| MD040             | Y                       | N                          | FALLSINTON-POCOMOKE-WOODSTOWN    | 0  | NONE    | 60.00   | 99.00  | 0.00   | 2.04  | 1.45  | 0.05  | 1.19     | 1.00     | WTDEP                   |                         |   | 71.00  | 23.00   | 114,343.90 |                    |
| MD041             | N                       | N                          | POCOMOKE-BERRYLAND-PLUMMER       | 0.5  | NONE    | 60.00   | 99.00  | -0.13  | 1.32  | 1.35  | 0.00  | 3.28     | 2.71     | WTDEP                   |                         |   | 77.00  | 22.20   | 2,549.93   |                    |
| MD041             | Y                       | N                          | POCOMOKE-BERRYLAND-PLUMMER       | 0.5  | NONE    | 60.00   | 99.00  | -0.13  | 1.32  | 1.35  | 0.00  | 3.28     | 2.71     | WTDEP                   |                         |   | 70.70  | 29.30   | 129,070.60 |                    |
| MD042             | N                       | N                          | NORFOLK-ELKTON-WOODSTOWN         | 0  | NONE    | 60.00   | 99.00  | 0.00   | 2.41  | 1.45  | 0.03  | 1.93     | 0.10     | WTDEP                   |                         |   | 74.60  | 25.40   | 23.49      |                    |
| MD042             | Y                       | N                          | NORFOLK-ELKTON-WOODSTOWN         | 0  | NONE    | 60.00   | 99.00  | 0.00   | 2.41  | 1.45  | 0.03  | 1.93     | 0.10     | WTDEP                   |                         |   | 72.40  | 27.60   | 25.65      |                    |
| MD043             | N                       | N                          | FALLSINTON-WOODSTOWN-SASSAFRAS   | 0  | NONE    | 60.00   | 99.00  | -0.03  | 2.71  | 1.61  | 0.00  | 0.84     | 1.06     | WTDEP                   |                         |   | 74.70  | 23.30   | 134,631.50 |                    |
| MD043             | Y                       | N                          | FALLSINTON-WOODSTOWN-SASSAFRAS   | 0  | NONE    | 60.00   | 99.00  | -0.03  | 2.71  | 1.61  | 0.00  | 0.84     | 1.06     | PERM2440                |                         |   | 78.60  | 21.40   | 120,779.50 |                    |
| MD044             | N                       | N                          | MATAPEAKE-BUTLERTOWN-SASSAFRAS   | 0  | NONE    | 60.00   | 99.00  | 0.00   | 4.45  | 1.39  | 0.05  | 0.58     | 0.00     | PERM2440                |                         |   | 73.60  | 24.40   | 4,418.43   |                    |
| MD044             | Y                       | N                          | MATAPEAKE-BUTLERTOWN-SASSAFRAS   | 0  | NONE    | 60.00   | 99.00  | 0.00   | 4.45  | 1.39  | 0.05  | 0.58     | 0.00     | PERM2440                |                         |   | 79.40  | 20.60   | 46,049.22  |                    |
| MD045             | N                       | N                          | MATAPEAKE-SASSAFRAS-MATAPEAK     | 0  | NONE    | 60.00   | 99.00  | 0.00   | 5.11  | 1.67  | 0.08  | 0.53     | 0.00     | PERM2440                |                         |   | 77.50  | 22.50   | 506.98     |                    |
| MD045             | Y                       | N                          | MATAPEAKE-SASSAFRAS-MATAPEAK     | 0  | NONE    | 60.00   | 99.00  | 0.00   | 5.11  | 1.67  | 0.08  | 0.53     | 0.00     | PERM2440                |                         |   | 80.20  | 19.80   | 39,542.73  |                    |
| MD046             | N                       | N                          | SASSAFRAS-COLLINGTON-MATAPEAKE   | 0  | NONE    | 60.00   | 99.00  | -0.03  | 5.39  | 1.61  | 0.30  | 3.97     | 0.00     |                         |                         |   | 75.00  | 24.20   | 18,173.50  |                    |
| MD046             | Y                       | N                          | SASSAFRAS-COLLINGTON-MATAPEAKE   | 0  | NONE    | 60.00   | 99.00  | -0.03  | 5.39  | 1.61  | 0.30  | 3.97     | 0.00     |                         |                         |   | 74.10  | 25.90   | 21,212.73  |                    |
| MD047             | N                       | N                          | SASSAFRAS-WOODSTOWN-FALLSINTON   | 0  | NONE    | 60.00   | 99.00  | 0.00   | 3.75  | 1.49  | 0.10  | 0.63     | 0.00     | WTDEP                   | PERM2440                |   | 74.50  | 24.20   | 7,821.18   |                    |
| MD047             | Y                       | N                          | SASSAFRAS-WOODSTOWN-FALLSINTON   | 0  | NONE    | 60.00   | 99.00  | 0.00   | 3.75  | 1.49  | 0.10  | 0.63     | 0.00     | WTDEP                   | PERM2440                |   | 71.10  | 23.90   | 40,192.17  |                    |
| MD048             | N                       | N                          | MATAPEAKE-OTIELLO-BUTLERTOWN     | 0  | NONE    | 60.00   | 99.00  | 0.00   | 2.25  | 2.40  | 0.04  | 1.27     | 0.01     | WTDEP                   |                         |   | 71.30  | 20.70   | 408.14     |                    |
| MD048             | Y                       | N                          | MATAPEAKE-OTIELLO-BUTLERTOWN     | 0  | NONE    | 60.00   | 99.00  | 0.00   | 2.25  | 2.40  | 0.04  | 1.27     | 0.01     | WTDEP                   |                         |   | 81.00  | 18.00   | 59,141.46  |                    |
| MD049             | N                       | N                          | EYESBORO-DOWNER-URBAN LAND       | 0  | NONE    | 55.50   | 99.00  | 0.00   | 5.32  | 1.87  | 0.08  | 3.29     | 2.67     |                         |                         |   | 76.30  | 23.70   | 9,857.56   |                    |
| MD049             | Y                       | N                          | EYESBORO-DOWNER-URBAN LAND       | 0  | NONE    | 55.50   | 99.00  | 0.00   | 5.32  | 1.87  | 0.08  | 3.29     | 2.67     |                         |                         |   | 77.20  | 22.80   | 393.91     |                    |

Table 1

SOIL PROPERTIES AFFECTING SEPTIC SUITABILITY

| MUD <sup>1</sup> | KARET FLAG <sup>2</sup> | CRITICAL AREA <sup>3</sup> | SOIL ASSOCIATION                | PERCENT COMPOSITION-WEIGHTED LIMITATION <sup>4</sup> |         |         |        |        |       |       | LIMITATION <sup>5</sup> |          |          | PERCENT |   | ACRES <sup>6</sup> |       |                |            |              |
|------------------|-------------------------|----------------------------|---------------------------------|--|---------|---------|--------|--------|-------|-------|-------------------------|----------|----------|---------|---|--------------------|-------|----------------|------------|--------------|
|                  |                         |                            |                                 | SUBTOT   | ANFLOOD | ROCKDEF | PANDEP | PRDDEP | WTDIF | SLOPE | INCH3                   | PERM1400 | PERM2400 | 1       | 2 |                    | 3     | GROUND SURFACE |            |              |
| MD09             | Y                       | Y                          | EVIDSBORO-DOWNER-URBAN LAND     | 0  | NONE    | 33.30   | 99.00  | 0.00   | 5.32  | 3.87  | 0.00                    | 3.3      | 2.67     |         |   |                    |       |                |            |              |
| MD00             | N                       | N                          | UNDERS-PENN-KLINEVILLE          | 0  | NONE    | 47.94   | 99.00  | 0.00   | 4.51  | 8.51  | 5.74                    | 1.29     | 0.66     |         |   |                    | 77.30 | 22.00          | 473.81     |              |
| MD06             | Y                       | N                          | UNDERS-PENN-KLINEVILLE          | 0  | NONE    | 47.94   | 99.00  | 0.00   | 4.51  | 8.51  | 5.74                    | 1.29     | 0.66     |         |   |                    | 76.90 | 23.30          | 94,592.47  |              |
| MD01             | N                       | N                          | MATAPEAKE-OTIELLO-SASSAFRAS     | 0  | NONE    | 60.00   | 99.00  | 0.01   | 4.64  | 3.67  | 0.00                    | 0.73     | 0.39     |         |   |                    | 74.10 | 23.90          | 26,741.04  |              |
| MD01             | N                       | Y                          | MATAPEAKE-OTIELLO-SASSAFRAS     | 0  | NONE    | 60.00   | 99.00  | 0.01   | 4.64  | 3.67  | 0.00                    | 0.73     | 0.39     |         |   |                    | 70.40 | 21.40          | 9,171.37   |              |
| MD02             | N                       | N                          | MATAPEAKE-KEYPORT-ELKTON        | 0  | NONE    | 33.30   | 99.00  | 0.01   | 3.11  | 2.74  | 0.15                    | 0.32     | 0.31     |         |   |                    | 76.30 | 23.50          | 187.57     |              |
| MD03             | N                       | N                          | WOODSTOWN-SASSAFRAS-FALLSINGTON | 0  | NONE    | 37.00   | 99.00  | 0.01   | 2.82  | 2.43  | 0.00                    | 0.33     | 0.27     |         |   |                    | 73.00 | 27.00          | 2,259.52   |              |
| MD04             | N                       | N                          | CINCOTEAQUE-MAGOTIA             | 0  | FREQ    | 60.00   | 99.00  | -1.37  | 1.41  | 0.35  | 0.00                    | 5.9      | 0.00     |         |   |                    | 73.90 | 27.10          | 971.15     |              |
| MD04             | N                       | Y                          | CINCOTEAQUE-MAGOTIA             | 0  | FREQ    | 60.00   | 99.00  | -1.37  | 1.41  | 0.35  | 0.00                    | 5.9      | 0.00     |         |   |                    | 69.10 | 36.90          | 1,554.21   |              |
| MD04             | N                       | N                          | LEWIS-BERKS-WEIKERT             | 0  | NONE    | 28.00   | 99.00  | 1.00   | 6.00  | 24.32 | 16.81                   | 1.28     | 1.24     |         |   |                    | 60.00 | 40.00          | 2,299.82   |              |
| MD04             | Y                       | N                          | LEWIS-BERKS-WEIKERT             | 0  | NONE    | 28.00   | 99.00  | 1.00   | 6.00  | 24.32 | 16.81                   | 1.28     | 1.24     |         |   |                    | 64.30 | 31.30          | 234,408.70 |              |
| MD07             | N                       | N                          | LEWIS-DEKALB-LAIDG              | 0  | NONE    | 34.35   | 99.00  | 0.00   | 5.54  | 21.79 | 18.00                   | 2.04     | 2.94     |         |   |                    | 72.30 | 27.70          | 1,818.47   |              |
| MD08             | N                       | N                          | BERKS-WEIKERT-LAIDG             | 0  | NONE    | 29.45   | 99.00  | 0.00   | 5.76  | 32.88 | 10.30                   | 2.11     | 2.05     |         |   |                    | 69.10 | 30.90          | 14,444.59  |              |
| MD08             | Y                       | N                          | BERKS-WEIKERT-LAIDG             | 0  | NONE    | 29.45   | 99.00  | 0.00   | 5.76  | 32.88 | 10.30                   | 2.11     | 2.05     |         |   |                    | 69.10 | 30.90          | 83,323.30  |              |
| MD09             | Y                       | N                          | PERR-CROTON-CALVERTON           | 0  | NONE    | 24.30   | 99.00  | 0.00   | 4.81  | 7.17  | 3.91                    | 2.59     | 2.17     |         |   |                    | 71.00 | 29.00          | 419.77     |              |
| MD09             | Y                       | N                          | PERR-CROTON-CALVERTON           | 0  | NONE    | 24.30   | 99.00  | 0.00   | 4.81  | 7.17  | 3.91                    | 2.59     | 2.17     |         |   |                    | 76.40 | 21.60          | 37,829.97  |              |
| MD09             | N                       | N                          | HAYESVILLE-PARKER-PEAKS         | 0  | NONE    | 37.34   | 99.00  | 0.00   | 6.00  | 18.45 | 4.30                    | 1.81     | 0.45     |         |   |                    | 76.90 | 23.30          | 1,462.43   |              |
| MD09             | Y                       | N                          | HAYESVILLE-PARKER-PEAKS         | 0  | NONE    | 37.34   | 99.00  | 0.00   | 6.00  | 18.45 | 4.30                    | 1.81     | 0.45     |         |   |                    | 85.10 | 14.90          | 49,070.34  |              |
| MD01             | N                       | N                          | WALLEN-DEKALB-DRYPOND           | 0  | NONE    | 33.31   | 99.00  | 0.00   | 5.81  | 31.68 | 20.23                   | 2.31     | 2.31     |         |   |                    | 75.30 | 24.70          | 1,547.14   |              |
| MD01             | Y                       | N                          | WALLEN-DEKALB-DRYPOND           | 0  | NONE    | 33.31   | 99.00  | 0.00   | 5.81  | 31.68 | 20.23                   | 2.31     | 2.31     |         |   |                    | 67.90 | 32.10          | 4,590.43   |              |
| MD02             | N                       | N                          | EDMONT-LAIDG-ROCK OUTCROP       | 0  | NONE    | 45.96   | 99.00  | 0.00   | 5.26  | 27.60 | 6.97                    | 1.51     | 0.00     |         |   |                    | 70.30 | 29.30          | 650.48     |              |
| MD02             | Y                       | N                          | EDMONT-LAIDG-ROCK OUTCROP       | 0  | NONE    | 45.96   | 99.00  | 0.00   | 5.26  | 27.60 | 6.97                    | 1.51     | 0.00     |         |   |                    | 70.00 | 30.00          | 431.34     |              |
| MD03             | N                       | N                          | ROANOKE-RAJNS-EUNOLA            | 0  | FREQ    | 60.00   | 99.00  | -0.00  | 0.87  | 1.00  | 0.00                    | 0.00     | 0.24     |         |   |                    | 67.70 | 32.30          | 627.65     |              |
| MD03             | N                       | Y                          | ROANOKE-RAJNS-EUNOLA            | 0  | FREQ    | 60.00   | 99.00  | -0.00  | 0.87  | 1.00  | 0.00                    | 0.00     | 0.24     |         |   |                    | 65.90 | 34.10          | 48,048.11  |              |
| MARYLAND AVERAGE |                         |                            |                                 |  |         | 6.95    |        | 53.47  | 98.00 | -4.04 | 4.37                    | 16.81    | 3.89     | 0.64    |   |                    |       | 74.24          | 25.76      |              |
| MARYLAND SUM     |                         |                            |                                 |  |         |         |        |        |       |       |                         |          |          |         |   |                    |       | 74.24          | 25.76      | 6,803,120.02 |
| NY01             | Y                       | N                          | STOCKBRIDGE-GEORGIA-FARMINGTON  | 0  | NONE    | 34.00   | 99.00  | -4.01  | 4.35  | 8.84  | 4.97                    | 0.81     | 0.00     |         |   |                    | 76.30 | 23.70          | 7,830.04   |              |
| NY02             | N                       | N                          | MOEAWK-MAMERS-AURORA            | 0  | NONE    | 54.00   | 99.00  | -4.01  | 1.84  | 6.58  | 1.42                    | 0.61     | 0.00     |         |   |                    | 71.30 | 28.70          | 14.4       |              |
| NY02             | N                       | N                          | NELLS-AMENIA-GALWAY             | 0  | NONE    | 55.50   | 99.00  | 4.00   | 3.80  | 6.61  | 3.44                    | 0.17     | 0.13     |         |   |                    | 72.30 | 26.80          | 0.01       |              |
| NY02             | Y                       | N                          | NELLS-AMENIA-GALWAY             | 0  | NONE    | 55.50   | 99.00  | 4.00   | 3.80  | 6.61  | 3.44                    | 0.17     | 0.13     |         |   |                    | 73.20 | 26.80          | 1,508.64   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 71.40 | 28.60          | 2,163.00   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 73.20 | 26.80          | 1,508.64   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 71.40 | 28.60          | 2,163.00   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 73.20 | 26.80          | 1,508.64   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 71.40 | 28.60          | 2,163.00   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 73.20 | 26.80          | 1,508.64   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 71.40 | 28.60          | 2,163.00   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 73.20 | 26.80          | 1,508.64   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 71.40 | 28.60          | 2,163.00   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 73.20 | 26.80          | 1,508.64   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 71.40 | 28.60          | 2,163.00   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 73.20 | 26.80          | 1,508.64   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 71.40 | 28.60          | 2,163.00   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 73.20 | 26.80          | 1,508.64   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 71.40 | 28.60          | 2,163.00   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 73.20 | 26.80          | 1,508.64   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 71.40 | 28.60          | 2,163.00   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 73.20 | 26.80          | 1,508.64   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 71.40 | 28.60          | 2,163.00   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 73.20 | 26.80          | 1,508.64   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 71.40 | 28.60          | 2,163.00   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 73.20 | 26.80          | 1,508.64   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 71.40 | 28.60          | 2,163.00   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 73.20 | 26.80          | 1,508.64   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 71.40 | 28.60          | 2,163.00   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 73.20 | 26.80          | 1,508.64   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 71.40 | 28.60          | 2,163.00   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 73.20 | 26.80          | 1,508.64   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 71.40 | 28.60          | 2,163.00   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 73.20 | 26.80          | 1,508.64   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 71.40 | 28.60          | 2,163.00   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 73.20 | 26.80          | 1,508.64   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0  | NONE    | 37.30   | 99.00  | 0.00   | 2.14  | 8.58  | 9.01                    | 0.26     | 0.06     |         |   |                    | 71.40 | 28.60          | 2,163.00   |              |
| NY02             | N                       | N                          | MAJDN-VOLUSIA-LORDSTOWN         | 0</  |         |         |        |        |       |       |                         |          |          |         |   |                    |       |                |            |              |

SOIL PROPERTIES AFFECTING SEPTIC SUITABILITY

| MUID <sup>1</sup> | KARST FLAG <sup>2</sup> | CRITICAL AREA <sup>3</sup> | SOIL ASSOCIATION               | PERCENT COMPOSITION-WEIGHTED LIMITATION <sup>4</sup> |         |         |        |        |       |       |       | LIMITATION <sup>5</sup> |          |          | PERCENT  |          | ACRES <sup>6</sup> |        |              |
|-------------------|-------------------------|----------------------------|--------------------------------|--|---------|---------|--------|--------|-------|-------|-------|-------------------------|----------|----------|----------|----------|--------------------|--------|--------------|
|                   |                         |                            |                                | SUBTCT   | ANFLOOD | ROCKDEP | PANDEP | PNDDEP | WTDEP | SLOPE | INCLD | PERM2460                | PERM2469 | 1        | 2        | 3        |                    | GROUND | SURFACE      |
| NY099             | N                       | N                          | TURKHAMMOCK-BARBOR-BASHER      | 0  | NONE    | 57.30   | 99.00  | 0.01   | 4.15  | 3.97  | 8.37  | 2.74                    | 0.00     | PNDDEP   |          |          | 77.70              | 2330   | 7,220.83     |
| NY110             | N                       | N                          | TIOGAMIDDLEBURY-CIENAGO        | 0  | RARE    | 39.10   | 99.00  | 0.01   | 3.30  | 1.80  | 1.61  | 3.48                    | 0.00     | WTDEP    | PNDDEP   |          | 74.00              | 2530   | 20,111.86    |
| NY125             | N                       | N                          | VALGHS-BATH-HOWARD             | 0  | NONE    | 39.40   | 99.00  | 0.00   | 5.04  | 11.93 | 4.42  | 2.45                    | 0.01     |          |          |          | 81.90              | 1810   | 44,139.17    |
| NY126             | Y                       | N                          | MARDIN-LORDSTOWN-VOLUSIA       | 0  | NONE    | 46.65   | 99.00  | 0.00   | 2.82  | 15.62 | 8.41  | 0.17                    | 0.15     | WTDEP    | PERM2460 | SLOPE    | 68.10              | 3130   | 2,037,331.00 |
| NY126             | Y                       | N                          | MARDIN-LORDSTOWN-VOLUSIA       | 0  | NONE    | 46.65   | 99.00  | 0.00   | 2.82  | 15.62 | 8.41  | 0.17                    | 0.15     | WTDEP    | PERM2460 | SLOPE    | 69.90              | 3610   | 241,415.80   |
| NY127             | N                       | N                          | BATH-MARDIN-LORDSTOWN          | 0  | NONE    | 53.10   | 99.00  | 0.00   | 3.00  | 16.62 | 8.64  | 0.29                    | 0.15     | WTDEP    | PERM2460 | SLOPE    | 67.70              | 3230   | 261,911.30   |
| NY127             | Y                       | N                          | BATH-MARDIN-LORDSTOWN          | 0  | NONE    | 53.10   | 99.00  | 0.00   | 3.00  | 16.62 | 8.64  | 0.29                    | 0.15     | WTDEP    | PERM2460 | SLOPE    | 67.40              | 3230   | 78,730.45    |
| NY128             | N                       | N                          | HONSOYE-ONTARIO-LIMA           | 0  | NONE    | 60.00   | 99.00  | -0.01  | 3.30  | 8.73  | 3.95  | 0.83                    | 0.00     | WTDEP    | PERM2460 |          | 73.90              | 2410   | 5,713.79     |
| NY128             | Y                       | N                          | HONSOYE-ONTARIO-LIMA           | 0  | NONE    | 60.00   | 99.00  | -0.01  | 3.30  | 8.73  | 3.95  | 0.83                    | 0.00     | WTDEP    | PERM2460 |          | 73.90              | 2410   | 123,339.80   |
| NY129             | N                       | N                          | WILLOYSMOC-LEWBACI-VLY         | 0  | NONE    | 36.40   | 99.00  | 0.00   | 2.46  | 9.18  | 6.01  | 0.87                    | 0.00     | WTDEP    | PERM2460 |          | 69.30              | 3670   | 83,084.36    |
| NY131             | N                       | N                          | DARLEM-CAZENOVIA-NUNDA         | 0  | NONE    | 36.40   | 99.00  | 0.00   | 1.36  | 4.37  | 1.58  | 0.12                    | 0.12     | WTDEP    | PERM2460 |          | 68.80              | 3130   | 72.38        |
| NY131             | Y                       | N                          | DARLEM-CAZENOVIA-NUNDA         | 0  | NONE    | 36.40   | 99.00  | 0.00   | 1.36  | 4.37  | 1.58  | 0.12                    | 0.12     | WTDEP    | PERM2460 |          | 78.00              | 3680   | 166.9        |
| NY132             | N                       | N                          | VLY-LACKAWANNA-OQUAQA          | 0  | NONE    | 38.70   | 99.00  | 0.00   | 5.29  | 28.36 | 12.89 | 0.04                    | 0.00     | ROCKDEP  | PERM2460 | SLOPE    | 63.60              | 3710   | 43,053.91    |
| NY133             | N                       | N                          | MONOUP-IALCOTT-MARDIN          | 0  | NONE    | 34.50   | 99.00  | 0.00   | 3.88  | 18.44 | 5.81  | 0.01                    | 0.00     | ROCKDEP  | PERM2460 |          | 68.70              | 3130   | 53,340.79    |
| NY133             | Y                       | N                          | MONOUP-IALCOTT-MARDIN          | 0  | NONE    | 34.50   | 99.00  | 0.00   | 3.88  | 18.44 | 5.81  | 0.01                    | 0.00     | ROCKDEP  | PERM2460 |          | 76.40              | 2340   | 58,153.61    |
| NY134             | N                       | N                          | CIENAGO-HOWARD-PALMYRA         | 0  | NONE    | 37.50   | 99.00  | 0.03   | 4.72  | 5.56  | 5.94  | 3.44                    | 0.00     | PNDDEP   |          |          | 78.00              | 3130   | 302,091.10   |
| NY134             | Y                       | N                          | CIENAGO-HOWARD-PALMYRA         | 0  | NONE    | 37.50   | 99.00  | 0.03   | 4.72  | 5.56  | 5.94  | 3.44                    | 0.00     | PNDDEP   |          |          | 74.90              | 2510   | 121,055.99   |
| NY136             | N                       | N                          | WELLSBORO-WURTSBORO-LACKAWANNA | 0  | NONE    | 46.00   | 99.00  | -0.01  | 1.95  | 8.41  | 0.80  | 0.15                    | 0.00     | WTDEP    | PERM2460 |          | 69.20              | 3030   | 156,319.00   |
| NY138             | N                       | N                          | HUDSON-RHINEBECK-COLLAMER      | 0  | NONE    | 60.00   | 99.00  | -0.01  | 1.95  | 8.41  | 0.80  | 0.15                    | 0.00     | WTDEP    | PERM2460 |          | 69.20              | 3030   | 5,899.08     |
| NY138             | Y                       | N                          | HUDSON-RHINEBECK-COLLAMER      | 0  | NONE    | 60.00   | 99.00  | -0.01  | 1.95  | 8.41  | 0.80  | 0.15                    | 0.00     | WTDEP    | PERM2460 |          | 69.20              | 3030   | 1,344.41     |
| NY141             | N                       | N                          | PALMS-CARLISLE-EDWARDS         | 29.42  | NONE    | 60.00   | 99.00  | 0.07   | 0.48  | 0.56  | 0.84  | 0.68                    | 0.22     | SUBTOT   | WTDEP    | PNDDEP   | 62.10              | 3710   | 3,052.21     |
| NY141             | Y                       | N                          | PALMS-CARLISLE-EDWARDS         | 29.42  | NONE    | 60.00   | 99.00  | 0.07   | 0.48  | 0.56  | 0.84  | 0.68                    | 0.22     | SUBTOT   | WTDEP    | PNDDEP   | 60.00              | 4240   | 7,610.94     |
| NY142             | N                       | N                          | WASSAC-FARMINGTON-LAIRDSVILLE  | 0  | NONE    | 26.31   | 99.00  | 0.00   | 3.15  | 4.30  | 2.11  | 0.82                    | 0.02     | ROCKDEP  | WTDEP    | PERM2460 | 62.90              | 3710   | 4,222.13     |
| NY142             | Y                       | N                          | WASSAC-FARMINGTON-LAIRDSVILLE  | 0  | NONE    | 26.31   | 99.00  | 0.00   | 3.15  | 4.30  | 2.11  | 0.82                    | 0.02     | ROCKDEP  | WTDEP    | PERM2460 | 72.50              | 2710   | 8,513.94     |
| NY143             | N                       | N                          | URBAN LAND-HOWARD-NIAGARA      | 0  | NONE    | 28.50   | 99.00  | 0.00   | 2.90  | 3.51  | 0.71  | 0.26                    | 0.00     | ROCKDEP  | WTDEP    | PERM2460 | 63.90              | 3410   | 56,478.72    |
| NY158             | N                       | N                          | FARMINGTON-OALWAY-STOCKBRIDGE  | 0  | NONE    | 32.82   | 99.00  | 0.00   | 4.41  | 11.84 | 3.44  | 0.31                    | 0.23     | ROCKDEP  | PERM2460 |          | 68.10              | 3610   | 49.3         |
| NY159             | Y                       | N                          | FARMINGTON-OALWAY-STOCKBRIDGE  | 0  | NONE    | 32.82   | 99.00  | 0.00   | 4.41  | 11.84 | 3.44  | 0.31                    | 0.23     | ROCKDEP  | PERM2460 |          | 73.20              | 2680   | 1,512.62     |
| NY159             | N                       | N                          | TEEL-WAYLAND-HAMLEN            | 0  | OCCAS   | 60.00   | 99.00  | 0.06   | 1.96  | 2.62  | 0.20  | 1.51                    | 0.44     | ANFLOOD  | WTDEP    | PNDDEP   | 65.10              | 3430   | 1,345.88     |
| NY159             | Y                       | N                          | TEEL-WAYLAND-HAMLEN            | 0  | OCCAS   | 60.00   | 99.00  | 0.06   | 1.96  | 2.62  | 0.20  | 1.51                    | 0.44     | ANFLOOD  | WTDEP    | PNDDEP   | 62.10              | 3710   | 1,181.74     |
| NY172             | N                       | N                          | LORDSTOWN-ARNOT-BATH           | 0  | NONE    | 31.85   | 99.00  | 0.00   | 5.29  | 20.96 | 9.56  | 0.38                    | 0.37     | ROCKDEP  | PERM2460 | SLOPE    | 64.20              | 3380   | 30,808.80    |
| NEW YORK AVERAGE  |                         |                            |                                | 0.99   |         | 31.05   | 99.00  | 0.01   | 3.48  | 9.78  | 6.54  | 1.26                    | 0.08     |          |          |          | 70.84              | 2916   |              |
| NEW YORK SUM      |                         |                            |                                |  |         |         |        |        |       |       |       |                         |          |          |          |          | 70.84              | 2916   | 3992138.13   |
| PA012             | N                       | N                          | HAZLETON-COOKPORT-ERNEST       | 0  | NONE    | 52.86   | 99.00  | 0.00   | 3.89  | 13.00 | 14.31 | 4.23                    | 0.00     | WTDEP    |          |          | 74.60              | 2510   | 326,977.30   |
| PA014             | N                       | N                          | OILPIN-ERNEST-CAVODE           | 0  | NONE    | 43.68   | 99.00  | 0.00   | 4.05  | 18.21 | 18.32 | 1.29                    | 0.59     |          |          |          | 73.70              | 2630   | 222,943.20   |
| PA015             | N                       | N                          | UDORTENTS-ERNEST-OILPIN        | 0  | NONE    | 44.96   | 99.00  | 0.00   | 4.56  | 16.45 | 9.97  | 0.98                    | 0.17     | SLOPE    |          |          | 73.60              | 2640   | 31,540.97    |
| PA017             | N                       | N                          | TILSIT-ERNEST-BUCHANAN         | 0  | NONE    | 48.90   | 99.00  | 0.00   | 1.98  | 6.01  | 5.20  | 0.85                    | 0.09     | WTDEP    |          |          | 71.30              | 2870   | 29,837.13    |
| PA018             | N                       | N                          | BUCHANAN-HARTLETON-HAZLETON    | 0  | NONE    | 53.68   | 99.00  | 0.00   | 3.58  | 11.23 | 20.22 | 2.37                    | 0.00     | WTDEP    |          |          | 73.10              | 2490   | 194,700.90   |
| PA019             | N                       | N                          | LECK KILL-HARTLETON-ALBRIGHTS  | 0  | NONE    | 53.38   | 99.00  | 0.00   | 4.22  | 18.63 | 14.61 | 2.07                    | 0.00     | SLOPE    |          |          | 76.70              | 2330   | 310,340.90   |
| PA020             | N                       | N                          | VOLUSIA-MARDIN-MORRIS          | 0  | NONE    | 55.58   | 99.00  | 0.00   | 2.84  | 16.80 | 8.46  | 0.10                    | 0.10     | WTDEP    | PERM2460 | SLOPE    | 66.90              | 3310   | 34,583.51    |
| PA021             | N                       | N                          | LACKAWANNA-BATH-LORDSTOWN      | 0  | NONE    | 54.30   | 99.00  | 0.00   | 3.87  | 21.91 | 8.99  | 0.18                    | 0.09     | WTDEP    | PERM2460 | SLOPE    | 70.30              | 2970   | 49,005.11    |
| PA022             | N                       | N                          | HAZLETON-DEKALB-BUCHANAN       | 0  | NONE    | 45.00   | 99.00  | 0.00   | 4.84  | 22.98 | 19.91 | 6.16                    | 1.80     | SLOPE    |          |          | 75.60              | 2410   | 1,649,250.00 |
| PA022             | Y                       | N                          | HAZLETON-DEKALB-BUCHANAN       | 0  | NONE    | 45.00   | 99.00  | 0.00   | 4.84  | 22.98 | 19.91 | 6.16                    | 1.80     | SLOPE    |          |          | 69.10              | 2630   | 1,325,022.00 |
| PA024             | N                       | N                          | WELLSBORO-OQUAQA-MORRIS        | 0  | NONE    | 51.90   | 99.00  | 0.00   | 3.87  | 11.74 | 18.31 | 0.03                    | 0.01     | SLOPE    |          |          | 77.50              | 2250   | 1,397,434.00 |
| PA024             | Y                       | N                          | WELLSBORO-OQUAQA-MORRIS        | 0  | NONE    | 51.90   | 99.00  | 0.00   | 3.87  | 11.74 | 18.31 | 0.03                    | 0.01     | WTDEP    | PERM2460 |          | 67.00              | 3030   | 8,410.66     |
| PA025             | N                       | N                          | VOLUSIA-MARDIN-LORDSTOWN       | 0  | NONE    | 51.30   | 99.00  | 0.00   | 2.76  | 18.13 | 9.14  | 0.15                    | 0.14     | WTDEP    | PERM2460 |          | 69.60              | 3040   | 1,008,794.00 |
| PA025             | Y                       | N                          | VOLUSIA-MARDIN-LORDSTOWN       | 0  | NONE    | 51.30   | 99.00  | 0.00   | 2.76  | 18.13 | 9.14  | 0.15                    | 0.14     | WTDEP    | PERM2460 |          | 70.40              | 2940   | 88.2         |
| PA026             | N                       | N                          | LACKAWANNA-ARNOT-MORRIS        | 0  | NONE    | 59.23   | 99.00  | 0.00   | 2.95  | 11.43 | 9.71  | 0.89                    | 0.00     | WTDEP    | PERM2460 |          | 66.00              | 3400   | 456,571.60   |
| PA027             | N                       | N                          | CIENAGO-POPE-HOLLY             | 0  | NONE    | 60.00   | 99.00  | -0.01  | 3.88  | 3.54  | 3.96  | 2.75                    | 0.01     | WTDEP    |          |          | 75.40              | 2440   | 274,417.50   |
| PA027             | Y                       | N                          | CIENAGO-POPE-HOLLY             | 0  | NONE    | 60.00   | 99.00  | -0.01  | 3.88  | 3.54  | 3.96  | 2.75                    | 0.01     | WTDEP    |          |          | 71.30              | 2870   | 187,914.10   |
| PA028             | N                       | N                          | UDORTENTS-URBAN LAND-VOLUSIA   | 0  | NONE    | 48.20   | 99.00  | 0.00   | 4.99  | 18.74 | 9.09  | 0.20                    | 0.20     | PERM2460 | SLOPE    |          | 69.30              | 2630   | 94,541.82    |
| PA029             | N                       | N                          | LECK KILL-MECKESVILLE-CALVIN   | 0  | NONE    | 47.93   | 99.00  | 0.00   | 4.91  | 9.35  | 6.71  | 2.11                    | 0.73     |          |          |          | 75.90              | 2134   | 294,161.40   |
| PA029             | Y                       | N                          | LECK KILL-MECKESVILLE-CALVIN   | 0  | NONE    | 47.93   | 99.00  | 0.00   | 4.91  | 9.35  | 6.71  | 2.11                    | 0.73     |          |          |          | 71.80              | 2518   | 24,126.60    |
| PA032             | N                       | N                          | WATSON-BUCHANAN-LECK KILL      | 0  | NONE    | 54.90   | 99.00  | 0.00   | 3.94  | 8.87  | 6.98  | 0.70                    | 0.21     | WTDEP    |          |          | 71.10              | 2890   | 30,443.58    |
| PA033             | N                       | N                          | BERKS-VEIKERT-BEDFORDTON       | 0  | NONE    | 34.35   | 99.00  | 0.00   | 5.21  | 17.11 | 18.38 | 1.73                    | 1.36     | ROCKDEP  | SLOPE    |          | 71.90              | 2710   | 1,176,583.00 |

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Table 1

SOIL PROPERTIES AFFECTING SEPTIC SUITABILITY

| MUD <sup>1</sup> | KARST CRITICAL    |                   | SOIL ASSOCIATION                   | PERCENT COMPOSITION-WEIGHTED LIMITATION <sup>6</sup> |         |         |        |        |       |       |        | LIMITATION <sup>6</sup> |          |          | PERCENT  |       | ACRES <sup>4</sup> |                |            |
|------------------|-------------------|-------------------|------------------------------------|--|---------|---------|--------|--------|-------|-------|--------|-------------------------|----------|----------|----------|-------|--------------------|----------------|------------|
|                  | FLAG <sup>2</sup> | AREA <sup>3</sup> |                                    | STOT   | ANFLOOD | ROCKDEP | PANDEP | PNDDEP | WTDIP | SLOPE | INCL13 | PERM2460                | PERM1440 | 1        | 2        | 3     |                    | GROUND SURFACE |            |
| PA333            | Y                 | N                 | BEUKS-WEIKERT-BEDFORDTON           | 0  | NONE    | 34.35   | 99.00  | 0.00   | 5.21  | 17.11 | 10.30  | 1.75                    | 1.34     | ROCKDEP  | SLOPE    |       | 74.30              | 25.70          | 614,501.54 |
| PA334            | N                 | N                 | UDORTIENTS-DEKALB-HAZLETON         | 0  | NONE    | 38.03   | 99.00  | 0.00   | 5.31  | 23.53 | 13.58  | 2.22                    | 1.04     | ROCKDEP  | SLOPE    |       | 71.60              | 28.40          | 81,490.11  |
| PA335            | N                 | N                 | WATSON-BEUKS-ALVIRA                | 0  | NONE    | 46.37   | 99.00  | 0.00   | 3.94  | 6.28  | 7.46   | 0.78                    | 0.44     | WTDEP    |          |       | 74.00              | 26.00          | 8,443.04   |
| PA336            | Y                 | N                 | WATSON-BEUKS-ALVIRA                | 0  | NONE    | 46.37   | 99.00  | 0.00   | 3.94  | 6.28  | 7.46   | 0.78                    | 0.44     | WTDEP    |          |       | 74.30              | 25.70          | 44,031.21  |
| PA337            | N                 | N                 | HAGERSTOWN-EDOM-WASHINGTON         | 0  | NONE    | 57.90   | 99.00  | 0.00   | 5.18  | 9.34  | 5.97   | 0.22                    | 0.01     | PERM2460 |          |       | 77.60              | 22.40          | 2,185.64   |
| PA338            | Y                 | N                 | HAGERSTOWN-EDOM-WASHINGTON         | 0  | NONE    | 57.90   | 99.00  | 0.00   | 5.18  | 9.34  | 5.97   | 0.22                    | 0.01     | PERM2460 |          |       | 76.30              | 23.70          | 18,617.17  |
| PA339            | Y                 | N                 | CLYMER-BUCHANAN-NORWICH            | 0.72   | NONE    | 47.00   | 99.00  | -0.83  | 4.81  | 4.93  | 11.54  | 1.11                    | 0.34     |          |          |       | 81.50              | 18.50          | 10,702.74  |
| PA340            | N                 | N                 | ARNOT-OQUAGA-DYSTROCIREPTS         | 0  | NONE    | 33.43   | 99.00  | 0.00   | 4.78  | 23.91 | 15.25  | 2.19                    | 0.01     | ROCKDEP  | SLOPE    |       | 64.00              | 36.00          | 68,889.11  |
| PA341            | N                 | N                 | URBAN LAND-UDORTIENTS-DYSTROCIREPT | 0  | NONE    | 22.54   | 99.00  | 0.00   | 2.81  | 9.31  | 5.54   | 0.72                    | 0.01     | ROCKDEP  | WTDEP    |       | 63.00              | 37.00          | 10,333.47  |
| PA342            | N                 | N                 | GULPH-WEIKERT-ERNEST               | 0  | NONE    | 31.85   | 99.00  | 0.00   | 5.23  | 23.99 | 10.85  | 0.40                    | 0.21     | ROCKDEP  | SLOPE    |       | 67.90              | 32.10          | 4,441.23   |
| PA343            | N                 | N                 | GULPH-WEIKERT-ERNEST               | 0  | NONE    | 48.25   | 99.00  | 0.00   | 3.94  | 15.53 | 6.07   | 0.16                    | 0.43     | ROCKDEP  | SLOPE    |       | 72.00              | 28.00          | 153,393.60 |
| PA344            | N                 | N                 | LICK KILL-CALVIN-KLINESVILLE       | 0  | NONE    | 37.00   | 99.00  | 0.00   | 5.39  | 22.80 | 6.18   | 2.16                    | 1.31     | ROCKDEP  | SLOPE    |       | 74.40              | 25.60          | 393,070.30 |
| PA345            | Y                 | N                 | LICK KILL-CALVIN-KLINESVILLE       | 0  | NONE    | 37.00   | 99.00  | 0.00   | 5.39  | 22.80 | 6.18   | 2.16                    | 1.31     | ROCKDEP  | SLOPE    |       | 73.40              | 26.60          | 20,116.51  |
| PA346            | N                 | N                 | MORRISON-MURRILL-HUBERSBURG        | 0  | NONE    | 44.26   | 99.00  | 0.00   | 2.84  | 7.89  | 6.60   | 0.16                    | 0.31     | WTDEP    |          |       | 72.10              | 27.90          | 24,930.40  |
| PA347            | N                 | N                 | MORRISON-MURRILL-HUBERSBURG        | 0  | NONE    | 59.42   | 99.00  | 0.00   | 5.78  | 10.84 | 6.07   | 0.11                    | 0.01     | PERM2460 |          |       | 76.40              | 23.60          | 12,501.14  |
| PA348            | Y                 | N                 | MORRISON-MURRILL-HUBERSBURG        | 0  | NONE    | 59.42   | 99.00  | 0.00   | 5.78  | 10.84 | 6.07   | 0.11                    | 0.01     | PERM2460 |          |       | 76.00              | 24.00          | 44,711.87  |
| PA349            | N                 | N                 | HAGERSTOWN-DUFFIELD-CLARKSBURG     | 0  | NONE    | 69.62   | 99.00  | 0.00   | 5.33  | 6.05  | 2.64   | 0.16                    | 0.01     | PERM2460 |          |       | 77.80              | 22.20          | 191,242.30 |
| PA350            | Y                 | N                 | HAGERSTOWN-DUFFIELD-CLARKSBURG     | 0  | NONE    | 69.62   | 99.00  | 0.00   | 5.33  | 6.05  | 2.64   | 0.16                    | 0.01     | PERM2460 |          |       | 77.00              | 23.00          | 19,342.30  |
| PA351            | N                 | N                 | WESTMORELAND-EDOM-OPEQUON          | 0  | NONE    | 42.61   | 99.00  | 0.00   | 5.34  | 14.95 | 4.77   | 0.75                    | 0.01     |          |          |       | 76.30              | 23.70          | 10,372.71  |
| PA352            | Y                 | N                 | WESTMORELAND-EDOM-OPEQUON          | 0  | NONE    | 42.61   | 99.00  | 0.00   | 5.34  | 14.95 | 4.77   | 0.75                    | 0.01     |          |          |       | 73.30              | 26.70          | 33,992.54  |
| PA353            | N                 | N                 | ELLIPER-OPEQUON-FRANKSTOWN         | 0  | NONE    | 49.82   | 99.00  | 0.00   | 5.54  | 23.64 | 10.40  | 0.16                    | 0.01     | SLOPE    |          |       | 71.90              | 28.10          | 19,442.18  |
| PA354            | Y                 | N                 | ELLIPER-OPEQUON-FRANKSTOWN         | 0  | NONE    | 49.82   | 99.00  | 0.00   | 5.54  | 23.64 | 10.40  | 0.16                    | 0.01     | SLOPE    |          |       | 71.00              | 29.00          | 20,777.03  |
| PA355            | N                 | N                 | CHRYSTER-OLENELO-MANOR             | 0  | NONE    | 58.05   | 99.00  | 0.00   | 4.97  | 9.73  | 4.28   | 0.16                    | 0.01     | PERM2460 |          |       | 75.50              | 24.50          | 204,977.00 |
| PA356            | Y                 | N                 | CHRYSTER-OLENELO-MANOR             | 0  | NONE    | 58.05   | 99.00  | 0.00   | 4.97  | 9.73  | 4.28   | 0.16                    | 0.01     | PERM2460 |          |       | 76.00              | 24.00          | 109,940.20 |
| PA357            | N                 | N                 | NEHAMMY-LEHIGH-OLENELO             | 0  | NONE    | 60.47   | 99.00  | 0.00   | 3.83  | 8.36  | 3.92   | 0.11                    | 0.01     | WTDEP    |          |       | 80.00              | 20.00          | 139,485.10 |
| PA358            | Y                 | N                 | NEHAMMY-LEHIGH-OLENELO             | 0  | NONE    | 60.47   | 99.00  | 0.00   | 3.83  | 8.36  | 3.92   | 0.11                    | 0.01     | WTDEP    |          |       | 73.90              | 26.10          | 4,808.87   |
| PA359            | N                 | N                 | UNDEERS-PENN-KLINESVILLE           | 0  | NONE    | 47.94   | 99.00  | 0.00   | 4.51  | 8.51  | 5.74   | 1.29                    | 0.64     |          |          |       | 76.00              | 24.00          | 207,556.90 |
| PA360            | Y                 | N                 | UNDEERS-PENN-KLINESVILLE           | 0  | NONE    | 47.94   | 99.00  | 0.00   | 4.51  | 8.51  | 5.74   | 1.29                    | 0.64     |          |          |       | 74.10              | 25.90          | 36,143.12  |
| PA361            | N                 | N                 | HIGHFIELD-ARENDETSVILLE-CATOCCTIN  | 0  | NONE    | 48.42   | 99.00  | 0.00   | 5.12  | 10.23 | 5.09   | 0.15                    | 0.01     |          |          |       | 79.00              | 21.00          | 49,008.16  |
| PA362            | Y                 | N                 | HIGHFIELD-ARENDETSVILLE-CATOCCTIN  | 0  | NONE    | 48.42   | 99.00  | 0.00   | 5.12  | 10.23 | 5.09   | 0.15                    | 0.01     |          |          |       | 73.30              | 26.70          | 16,029.74  |
| PA363            | N                 | N                 | EDMONT-HIGHFIELD-BUCHANAN          | 0  | NONE    | 35.23   | 99.00  | 0.00   | 5.53  | 15.09 | 8.45   | 2.41                    | 0.01     | SLOPE    |          |       | 82.30              | 17.70          | 48,720.23  |
| PA364            | Y                 | N                 | EDMONT-HIGHFIELD-BUCHANAN          | 0  | NONE    | 35.23   | 99.00  | 0.00   | 5.53  | 15.09 | 8.45   | 2.41                    | 0.01     | SLOPE    |          |       | 74.10              | 25.90          | 16,228.98  |
| PA365            | N                 | N                 | RYDER-CLARKSBURG-BEUKS             | 0  | NONE    | 30.84   | 99.00  | 0.00   | 4.48  | 6.64  | 4.55   | 0.22                    | 0.70     |          |          |       | 75.40              | 24.60          | 78.03      |
| PA366            | Y                 | N                 | RYDER-CLARKSBURG-BEUKS             | 0  | NONE    | 30.84   | 99.00  | 0.00   | 4.48  | 6.64  | 4.55   | 0.22                    | 0.70     |          |          |       | 73.40              | 26.60          | 544.2      |
| PA367            | N                 | N                 | ATKOL-PENLAU-DUNNING               | 0  | NONE    | 64.81   | 99.00  | 0.00   | 4.46  | 6.48  | 1.49   | 0.11                    | 0.01     | PERM2460 |          |       | 74.90              | 25.10          | 10,309.76  |
| PA368            | Y                 | N                 | ATKOL-PENLAU-DUNNING               | 0  | NONE    | 64.81   | 99.00  | 0.00   | 4.46  | 6.48  | 1.49   | 0.11                    | 0.01     | PERM2460 |          |       | 74.90              | 25.10          | 5,927.22   |
| PA369            | N                 | N                 | LETORT-PEQUEA-CONESTOGA            | 0  | NONE    | 60.05   | 99.00  | 0.00   | 5.42  | 8.25  | 1.77   | 0.79                    | 0.01     |          |          |       | 79.00              | 21.00          | 9,544.27   |
| PA370            | Y                 | N                 | LETORT-PEQUEA-CONESTOGA            | 0  | NONE    | 60.05   | 99.00  | 0.00   | 5.42  | 8.25  | 1.77   | 0.79                    | 0.01     |          |          |       | 76.40              | 23.60          | 92,181.28  |
| PA371            | N                 | N                 | DUNCANNON-URBAN LAND-CHAVIES       | 0  | NONE    | 45.12   | 99.00  | 0.00   | 4.46  | 4.37  | 0.91   | 0.74                    | 0.33     |          |          |       | 73.60              | 26.40          | 14,314.79  |
| PA372            | Y                 | N                 | DUNCANNON-URBAN LAND-CHAVIES       | 0  | NONE    | 45.12   | 99.00  | 0.00   | 4.46  | 4.37  | 0.91   | 0.74                    | 0.33     |          |          |       | 74.50              | 25.50          | 5,451.68   |
| PA373            | N                 | N                 | MURRILL-BUCHANAN-LAIDIO            | 0  | NONE    | 60.59   | 99.00  | 0.00   | 4.71  | 0.06  | 5.24   | 0.14                    | 0.02     | PERM2460 |          |       | 73.30              | 26.70          | 10,979.97  |
| PA374            | Y                 | N                 | MURRILL-BUCHANAN-LAIDIO            | 0  | NONE    | 60.59   | 99.00  | 0.00   | 4.71  | 0.06  | 5.24   | 0.14                    | 0.02     | PERM2460 |          |       | 73.00              | 27.00          | 77,646.11  |
| PA375            | N                 | N                 | MORRISON-HAZLETON-CLYMER           | 0  | NONE    | 34.58   | 99.00  | 0.00   | 5.94  | 15.40 | 8.98   | 2.10                    | 0.18     | SLOPE    |          |       | 77.70              | 22.30          | 40,617.25  |
| PA376            | Y                 | N                 | MORRISON-HAZLETON-CLYMER           | 0  | NONE    | 34.58   | 99.00  | 0.00   | 5.94  | 15.40 | 8.98   | 2.10                    | 0.18     | WTDEP    |          |       | 75.00              | 25.00          | 70,937.17  |
| PA377            | N                 | N                 | MORRISON-HAZLETON-CLYMER           | 0  | NONE    | 34.58   | 99.00  | 0.00   | 5.94  | 15.40 | 8.98   | 2.10                    | 0.18     | PERM2460 |          |       | 74.00              | 26.00          | 19,842.31  |
| PA378            | Y                 | N                 | MORRISON-HAZLETON-CLYMER           | 0  | NONE    | 34.58   | 99.00  | 0.00   | 5.94  | 15.40 | 8.98   | 2.10                    | 0.18     | PERM2460 |          |       | 74.30              | 25.70          | 117,110.90 |
| PA379            | N                 | N                 | EDOM-OPEQUON-WEIKERT               | 0  | NONE    | 38.34   | 99.00  | 0.00   | 5.38  | 16.25 | 4.70   | 0.40                    | 0.15     | ROCKDEP  | SLOPE    |       | 74.40              | 25.60          | 15,539.96  |
| PA380            | Y                 | N                 | EDOM-OPEQUON-WEIKERT               | 0  | NONE    | 38.34   | 99.00  | 0.00   | 5.38  | 16.25 | 4.70   | 0.40                    | 0.15     | ROCKDEP  | SLOPE    |       | 73.40              | 26.60          | 111,627.50 |
| PA381            | N                 | N                 | ALLENWOOD-WATSON-ALVIRA            | 0  | NONE    | 57.14   | 99.00  | 0.00   | 4.32  | 6.00  | 3.37   | 0.11                    | 0.01     | PERM2460 |          |       | 76.40              | 23.60          | 1,644.21   |
| PA382            | Y                 | N                 | ALLENWOOD-WATSON-ALVIRA            | 0  | NONE    | 57.14   | 99.00  | 0.00   | 4.32  | 6.00  | 3.37   | 0.11                    | 0.01     | PERM2460 |          |       | 76.10              | 23.90          | 55,713.22  |
| PA383            | N                 | N                 | EDOM-MILLBURN-CALVIN               | 0  | NONE    | 36.28   | 99.00  | 0.00   | 5.49  | 9.72  | 3.96   | 1.19                    | 0.18     |          |          |       | 84.10              | 15.90          | 37,941.14  |
| PA384            | Y                 | N                 | OQUAGA-LORDSTOWN-WURTEBORO         | 0  | NONE    | 23.70   | 99.00  | 0.00   | 5.16  | 10.60 | 12.49  | 0.16                    | 0.01     | ROCKDEP  | PERM2460 | SLOPE | 64.00              | 36.00          | 192,136.30 |
| PA385            | N                 | N                 | LEHIGH-HAZLETON-UNDEERS            | 0  | NONE    | 33.70   | 99.00  | 0.00   | 5.92  | 36.77 | 21.15  | 0.02                    | 0.01     | ROCKDEP  | SLOPE    |       | 63.00              | 37.00          | 24,299.54  |
| PA386            | Y                 | N                 | LEHIGH-HAZLETON-UNDEERS            | 0  | NONE    | 33.70   | 99.00  | 0.00   | 5.92  | 36.77 | 21.15  | 0.02                    | 0.01     | ROCKDEP  | SLOPE    |       | 70.40              | 29.60          | 1,933.57   |
| PA387            | N                 | N                 | CHROME-CORNWOOD-NEHAMMY            | 0  | NONE    | 36.33   | 99.00  | 0.00   | 5.39  | 13.82 | 4.38   | 1.16                    | 0.02     | ROCKDEP  |          |       | 77.00              | 23.00          | 8,541.94   |
| PA388            | Y                 | N                 | CHROME-CORNWOOD-NEHAMMY            | 0  | NONE    | 36.33   | 99.00  | 0.00   | 5.39  | 13.82 | 4.38   | 1.16                    | 0.02     | ROCKDEP  | PERM2460 |       | 76.00              | 24.00          | 46,001.70  |
| PA389            | N                 | N                 | MT. AIRY-OLENELO-LINGANORE         | 0  | NONE    | 38.28   | 99.00  | 0.00   | 5.48  | 10.96 | 6.88   | 0.39                    | 0.02     | ROCKDEP  | PERM2460 |       | 76.40              | 23.60          | 60,995.27  |
| PA390            | Y                 | N                 | MT. AIRY-OLENELO-LINGANORE         | 0  | NONE    | 38.28   | 99.00  | 0.00   | 5.48  | 10.96 | 6.88   | 0.39                    | 0.02     | ROCKDEP  | PERM2460 |       | 76.40              | 23.60          | 60,995.27  |

Table 1

### SOIL PROPERTIES AFFECTING SEPTIC SUITABILITY

| MUID <sup>1</sup>    | HARST FLAG <sup>2</sup> | CRITICAL AREA <sup>3</sup> | SOIL ASSOCIATION                  | PERCENT COMPOSITION-WEIGHTED LIMITATION <sup>4</sup> |         |         |        |        |       |       |       | LIMITATION <sup>5</sup> |          |                         | PERCENT  |          | ACRES <sup>6</sup> |           |            |               |
|----------------------|-------------------------|----------------------------|-----------------------------------|--|---------|---------|--------|--------|-------|-------|-------|-------------------------|----------|-------------------------|----------|----------|--------------------|-----------|------------|---------------|
|                      |                         |                            |                                   | SUBTOT   | INFLOOD | ROCKDEP | PANDEP | PNDDEP | WTDEP | SLOPE | INCH  | PERM2460                | PERM2460 | LIMITATION <sup>5</sup> |          |          |                    | PERCENT   |            |               |
|                      |                         |                            |                                   |  |         |         |        |        |       |       |       |                         |          | 1                       | 2        | 3        |                    | GROUND    | SURFACE    |               |
| PA089                | N                       | N                          | MARDIN-LORDSTOWN-VOLUSIA          | 0  | NONE    | 33.25   | 99.00  | 0.00   | 2.70  | 11.41 | 9.00  | 0.52                    | 0.11     | WTDEP                   | PERM2460 | SLOPE    | 65.00              | 34.00     | 1,297.77   |               |
| PA090                | N                       | N                          | VOLUSIA-NARDIN-FREMONT            | 0  | NONE    | 18.05   | 99.00  | 0.00   | 1.35  | 4.96  | 8.12  | 0.17                    | 0.03     | WTDEP                   | PERM2460 |          | 70.20              | 29.80     | 6,797.07   |               |
| PA092                | N                       | N                          | LORDSTOWN-ARNOT-BATH              | 0  | NONE    | 31.05   | 99.00  | 0.00   | 5.29  | 24.96 | 9.54  | 0.38                    | 0.37     | ROCKDEP                 | PERM2460 | SLOPE    | 64.20              | 35.80     | 27,379.14  |               |
| PA097                | N                       | N                          | CYENANOC-TIOGA-VALOIE             | 0.28   | NONE    | 37.50   | 99.00  | 0.01   | 4.17  | 3.04  | 6.21  | 2.32                    | 0.00     | PNDDEP                  |          |          | 76.70              | 23.30     | 14,636.19  |               |
| PA099                | N                       | N                          | MARDIN-VOLUSIA-LORDSTOWN          | 0  | NONE    | 37.50   | 99.00  | 0.00   | 2.14  | 8.50  | 9.81  | 0.20                    | 0.04     | WTDEP                   | PERM2460 |          | 71.40              | 28.60     | 4,121.11   |               |
| PA100                | N                       | N                          | LACKAWANNA-OQUAGA-WELLSBORO       | 0  | NONE    | 32.05   | 99.00  | 0.00   | 4.18  | 21.36 | 10.40 | 0.40                    | 0.00     | PERM2460                | SLOPE    | 66.70    | 33.30              | 8,212.11  |            |               |
| PA101                | N                       | N                          | FAUQUIER-MYERSVILLE-IRONFIELD     | 0  | NONE    | 45.44   | 99.00  | 0.00   | 5.00  | 11.41 | 4.38  | 1.42                    | 0.00     |                         |          |          | 82.00              | 17.90     | 2,654.15   |               |
| PA101                | Y                       | N                          | FAUQUIER-MYERSVILLE-IRONFIELD     | 0  | NONE    | 45.44   | 99.00  | 0.00   | 5.00  | 11.41 | 4.38  | 1.42                    | 0.00     |                         |          |          | 76.10              | 23.90     | 2,341.10   |               |
| PA103                | N                       | N                          | LEISW-DEKALB-WEIKERT              | 0  | NONE    | 28.00   | 99.00  | 0.00   | 6.00  | 24.52 | 16.81 | 1.24                    | 1.24     | ROCKDEP                 | SLOPE    | 64.50    | 35.50              | 65,000.29 |            |               |
| PA104                | N                       | N                          | LEISW-DEKALB-LAIDIO               | 0  | NONE    | 34.35   | 99.00  | 0.00   | 5.54  | 11.79 | 10.08 | 2.94                    | 2.94     | ROCKDEP                 | SLOPE    | 69.10    | 30.90              | 1,610.07  |            |               |
| PA105                | N                       | N                          | DEKALB-WEIKERT-LAIDIO             | 0  | NONE    | 29.45   | 99.00  | 0.00   | 5.76  | 31.88 | 10.50 | 2.15                    | 2.03     | ROCKDEP                 | SLOPE    | 69.10    | 30.90              | 52,429.15 |            |               |
| PA105                | Y                       | N                          | DEKALB-WEIKERT-LAIDIO             | 0  | NONE    | 29.45   | 99.00  | 0.00   | 5.76  | 31.88 | 10.50 | 2.15                    | 2.03     | ROCKDEP                 | SLOPE    | 71.00    | 29.00              | 2,659.29  |            |               |
| PENNSYLVANIA AVERAGE |                         |                            |                                   | 0.01   |         | 40.74   | 99.00  | 0.00   | 4.89  | 13.70 | 8.11  | 1.12                    | 0.33     |                         |          |          | 73.01              | 26.99     |            |               |
| PENNSYLVANIA SUM     |                         |                            |                                   |  |         |         |        |        |       |       |       |                         |          |                         |          |          |                    |           |            | 14,364,716.00 |
| VA001                | N                       | N                          | DEKALB-WEIKERT-LAIDIO             | 0  | NONE    | 29.45   | 99.00  | 0.00   | 5.76  | 32.00 | 10.50 | 2.15                    | 2.03     | ROCKDEP                 | SLOPE    |          | 69.10              | 30.90     | 407,334.30 |               |
| VA001                | Y                       | N                          | DEKALB-WEIKERT-LAIDIO             | 0  | NONE    | 29.45   | 99.00  | 0.00   | 5.76  | 32.00 | 10.50 | 2.15                    | 2.03     | ROCKDEP                 | SLOPE    |          | 71.00              | 29.00     | 220,343.30 |               |
| VA002                | N                       | N                          | CARBO-CILIHOWIS-FREDERICK         | 0  | NONE    | 34.40   | 99.00  | 0.00   | 6.00  | 24.50 | 4.74  | 7.70                    | 7.70     | ROCKDEP                 | PERM2460 | SLOPE    | 80.90              | 19.10     | 941.00     |               |
| VA002                | Y                       | N                          | CARBO-CILIHOWIS-FREDERICK         | 0  | NONE    | 34.40   | 99.00  | 0.00   | 6.00  | 24.50 | 4.74  | 7.70                    | 7.70     | ROCKDEP                 | PERM2460 | SLOPE    | 82.30              | 17.70     | 261,104.10 |               |
| VA003                | N                       | N                          | FREDERICK-CARBO-TIMBERVILLE       | 0  | NONE    | 54.90   | 99.00  | 0.00   | 5.94  | 17.64 | 3.50  | 1.95                    | 1.87     | SLOPE                   |          |          | 76.70              | 23.30     | 52,296.32  |               |
| VA003                | Y                       | N                          | FREDERICK-CARBO-TIMBERVILLE       | 0  | NONE    | 54.90   | 99.00  | 0.00   | 5.94  | 17.64 | 3.50  | 1.95                    | 1.87     | SLOPE                   |          |          | 74.40              | 25.60     | 644,166.00 |               |
| VA004                | N                       | N                          | MOOMAW-EFFERSON-ALONZVILLE        | 0  | NONE    | 59.35   | 99.00  | 0.00   | 4.19  | 6.27  | 7.20  | 0.07                    | 0.00     | PERM2460                |          |          | 73.70              | 26.30     | 128,287.00 |               |
| VA004                | Y                       | N                          | MOOMAW-EFFERSON-ALONZVILLE        | 0  | NONE    | 59.35   | 99.00  | 0.00   | 4.19  | 6.27  | 7.20  | 0.07                    | 0.00     | PERM2460                |          |          | 73.00              | 27.00     | 215,793.20 |               |
| VA005                | N                       | N                          | WALLEN-DEKALB-DRYPOND             | 0  | NONE    | 33.31   | 99.00  | 0.00   | 5.81  | 31.68 | 20.23 | 2.31                    | 2.31     | ROCKDEP                 | SLOPE    |          | 67.90              | 32.10     | 720,516.20 |               |
| VA005                | Y                       | N                          | WALLEN-DEKALB-DRYPOND             | 0  | NONE    | 33.31   | 99.00  | 0.00   | 5.81  | 31.68 | 20.23 | 2.31                    | 2.31     | ROCKDEP                 | SLOPE    |          | 70.50              | 29.50     | 596,075.70 |               |
| VA006                | N                       | N                          | CATOCHTIN-MYERSVILLE-ROCK OUTCROP | 0  | NONE    | 31.90   | 99.00  | 0.00   | 5.92  | 24.50 | 10.70 | 0.30                    | 0.04     | ROCKDEP                 | PERM2460 | SLOPE    | 67.50              | 32.50     | 488,004.90 |               |
| VA006                | Y                       | N                          | CATOCHTIN-MYERSVILLE-ROCK OUTCROP | 0  | NONE    | 31.90   | 99.00  | 0.00   | 5.92  | 24.50 | 10.70 | 0.30                    | 0.04     | ROCKDEP                 | PERM2460 | SLOPE    | 72.20              | 27.80     | 91,281.97  |               |
| VA007                | N                       | N                          | HAYESVILLE-PARKER-PEAKS           | 0  | NONE    | 37.54   | 99.00  | 0.00   | 6.00  | 18.15 | 4.30  | 3.85                    | 0.45     | SLOPE                   |          |          | 83.10              | 16.90     | 664,359.60 |               |
| VA007                | Y                       | N                          | HAYESVILLE-PARKER-PEAKS           | 0  | NONE    | 37.54   | 99.00  | 0.00   | 6.00  | 18.15 | 4.30  | 3.85                    | 0.45     | SLOPE                   |          |          | 75.30              | 24.70     | 141,475.70 |               |
| VA008                | N                       | N                          | ALTAVISTA-WICKHAM-AUGUSTA         | 0  | OCCAS   | 60.00   | 99.00  | 0.00   | 3.49  | 2.56  | 0.03  | 0.03                    | 0.03     | ANFLOOD                 | VTDEP    | PERM2460 | 60.00              | 40.00     | 9,945.37   |               |
| VA008                | Y                       | N                          | ALTAVISTA-WICKHAM-AUGUSTA         | 0  | OCCAS   | 60.00   | 99.00  | 0.00   | 3.49  | 2.56  | 0.03  | 0.03                    | 0.03     | ANFLOOD                 | VTDEP    | PERM2460 | 60.40              | 39.60     | 2,165.01   |               |
| VA009                | N                       | N                          | CULPEPER-HAZEL-WORSHAM            | 0  | NONE    | 42.78   | 99.00  | 0.00   | 5.40  | 13.14 | 6.67  | 0.66                    | 0.66     |                         |          |          | 77.70              | 22.30     | 36,114.11  |               |
| VA009                | Y                       | N                          | CULPEPER-HAZEL-WORSHAM            | 0  | NONE    | 42.78   | 99.00  | 0.00   | 5.40  | 13.14 | 6.67  | 0.66                    | 0.66     |                         |          |          | 76.10              | 23.90     | 37,606.04  |               |
| VA010                | N                       | N                          | CODORUS-HATBORO-KINKORA           | 0  | FREQ    | 60.00   | 99.00  | 0.00   | 1.65  | 0.57  | 3.11  | 7.00                    | 0.16     | ANFLOOD                 | VTDEP    |          | 70.40              | 29.60     | 55,502.94  |               |
| VA010                | Y                       | N                          | CODORUS-HATBORO-KINKORA           | 0  | FREQ    | 60.00   | 99.00  | 0.00   | 1.65  | 0.57  | 3.11  | 7.00                    | 0.16     | ANFLOOD                 | VTDEP    |          | 62.30              | 37.70     | 9,330.71   |               |
| VA011                | N                       | N                          | MINNIEVILLE-HAZEL-JACKLAND        | 0  | NONE    | 51.40   | 99.00  | 0.00   | 5.91  | 12.29 | 4.47  | 0.99                    | 0.00     |                         |          |          | 82.70              | 17.30     | 16,026.07  |               |
| VA011                | Y                       | N                          | MINNIEVILLE-HAZEL-JACKLAND        | 0  | NONE    | 51.40   | 99.00  | 0.00   | 5.91  | 12.29 | 4.47  | 0.99                    | 0.00     |                         |          |          | 77.30              | 22.70     | 21,332.34  |               |
| VA012                | N                       | N                          | BRADDOCK-DYKE                     | 0  | NONE    | 64.00   | 99.00  | 0.00   | 6.00  | 10.19 | 3.94  | 0.00                    | 0.00     | PERM2460                |          |          | 77.50              | 22.50     | 68,533.10  |               |
| VA012                | Y                       | N                          | BRADDOCK-DYKE                     | 0  | NONE    | 57.10   | 99.00  | 0.00   | 5.55  | 12.0  | 2.23  | 0.57                    | 0.00     | PERM2460                |          |          | 70.30              | 29.70     | 204,516.90 |               |
| VA014                | N                       | N                          | NASON-MAITEO-GOLDSTON             | 0  | NONE    | 42.30   | 99.00  | 0.00   | 5.96  | 13.11 | 5.63  | 0.73                    | 0.00     | PERM2460                |          |          | 74.70              | 25.30     | 216,510.90 |               |
| VA014                | Y                       | N                          | NASON-MAITEO-GOLDSTON             | 0  | NONE    | 42.30   | 99.00  | 0.00   | 5.96  | 13.11 | 5.63  | 0.73                    | 0.00     | PERM2460                |          |          | 82.90              | 17.10     | 687,802.60 |               |
| VA015                | N                       | N                          | PENN-CROTON-CALVERTON             | 0  | NONE    | 34.30   | 99.00  | 0.00   | 4.81  | 7.17  | 3.91  | 2.50                    | 2.17     | ROCKDEP                 |          |          | 77.60              | 22.40     | 74,950.20  |               |
| VA015                | Y                       | N                          | PENN-CROTON-CALVERTON             | 0  | NONE    | 34.30   | 99.00  | 0.00   | 4.81  | 7.17  | 3.91  | 2.50                    | 2.17     | ROCKDEP                 |          |          | 78.40              | 21.60     | 296,422.60 |               |
| VA016                | N                       | N                          | SHOTTOWER-LAIDIO-WEIKERT          | 0  | NONE    | 51.50   | 99.00  | 0.00   | 5.19  | 15.00 | 11.84 | 0.09                    | 0.09     | PERM2460                | SLOPE    |          | 70.40              | 29.60     | 29,511.15  |               |
| VA016                | Y                       | N                          | SHOTTOWER-LAIDIO-WEIKERT          | 0  | NONE    | 51.50   | 99.00  | 0.00   | 5.19  | 15.00 | 11.84 | 0.09                    | 0.09     | PERM2460                | SLOPE    |          | 71.20              | 28.80     | 121,701.90 |               |
| VA017                | N                       | N                          | GROSEBLOIS-LITZ-SHOTTOWER         | 0  | NONE    | 41.00   | 99.00  | 0.00   | 6.00  | 23.19 | 2.51  | 0.00                    | 0.00     | PERM2460                | SLOPE    |          | 68.90              | 31.10     | 93,007.64  |               |
| VA017                | Y                       | N                          | GROSEBLOIS-LITZ-SHOTTOWER         | 0  | NONE    | 41.00   | 99.00  | 0.00   | 6.00  | 23.19 | 2.51  | 0.00                    | 0.00     | PERM2460                | SLOPE    |          | 72.90              | 27.10     | 14,151.80  |               |
| VA019                | N                       | N                          | CBCIL-MADISON-ENON                | 0  | NONE    | 51.63   | 99.00  | 0.00   | 3.95  | 10.3  | 2.40  | 0.21                    | 0.21     | PERM2460                |          |          | 79.50              | 20.50     | 461,032.30 |               |
| VA019                | Y                       | N                          | CBCIL-MADISON-ENON                | 0  | NONE    | 51.63   | 99.00  | 0.00   | 3.95  | 10.3  | 2.40  | 0.21                    | 0.21     | PERM2460                |          |          | 70.20              | 29.80     | 90,276.00  |               |
| VA021                | N                       | N                          | AIRMONT-SUMPTOWN-WEVERTON         | 0  | NONE    | 41.90   | 99.00  | 0.00   | 3.79  | 20.14 | 36.56 | 0.19                    | 0.01     | WTDEP PERM              | PERM2460 | SLOPE    | 63.50              | 36.50     | 21,604.80  |               |
| VA021                | Y                       | N                          | AIRMONT-SUMPTOWN-WEVERTON         | 0  | NONE    | 41.90   | 99.00  | 0.00   | 3.79  | 20.14 | 36.56 | 0.19                    | 0.01     | WTDEP PERM              | PERM2460 | SLOPE    | 67.40              | 32.60     | 3,703.60   |               |
| VA022                | N                       | N                          | JACKLAND-WAXPOOL-CATLETT          | 0  | NONE    | 51.85   | 99.00  | 0.00   | 2.39  | 4.01  | 2.02  | 0.22                    | 0.01     | WTDEP PERM              | PERM2460 |          | 71.00              | 29.00     | 137,632.50 |               |
| VA022                | Y                       | N                          | JACKLAND-WAXPOOL-CATLETT          | 0  | NONE    | 51.85   | 99.00  | 0.00   | 2.39  | 4.01  | 2.02  | 0.22                    | 0.01     | WTDEP PERM              | PERM2460 |          | 72.40              | 27.60     | 9,872.77   |               |
| VA023                | N                       | N                          | BRECKNOCK-KELLY-CROTON            | 0  | NONE    | 47.50   | 99.00  | 0.00   | 3.82  | 4.11  | 3.73  | 0.96                    | 0.00     | VTDEP                   |          |          | 78.90              | 21.10     | 64,791.50  |               |
| VA023                | Y                       | N                          | BRECKNOCK-KELLY-CROTON            | 0  | NONE    | 47.50   | 99.00  | 0.00   | 3.82  | 4.11  | 3.73  | 0.96                    | 0.00     | VTDEP                   |          |          | 75.10              | 24.90     | 5,162.72   |               |

Table 1

SOIL PROPERTIES AFFECTING SEPTIC SUITABILITY

| MUIE <sup>1</sup> | KARST FLAG <sup>2</sup> | CRITICAL AREA <sup>3</sup> | SOIL ASSOCIATION            | PERCENT COMPOSITION-WEIGHTED LIMITATION <sup>4</sup> |         |         |        |        |       |       |       |          |          | LIMITATION <sup>5</sup> |          |          | PERCENT |         | ACRES <sup>6</sup> |
|-------------------|-------------------------|----------------------------|-----------------------------|--|---------|---------|--------|--------|-------|-------|-------|----------|----------|-------------------------|----------|----------|---------|---------|--------------------|
|                   |                         |                            |                             | SUTOT  | ANFLOOD | ROCKDEP | PANDEP | PNDDEP | WTDEI | SLOPE | INCL  | PERM1469 | PERM1460 | 1                       | 2        | 3        | GROUND  | SURFACE |                    |
| VA021             | N                       | N                          | DYKE-UNION-WAPOOL           | 0  | NONE    | 60.00   | 99.00  | 0.00   | 5.67  | 7.56  | 3.40  | 0.02     | 0.00     | PERM2460                |          |          | 78.00   | 21.00   | 11,050.77          |
| VA021             | N                       | N                          | DUMFRIES-NEARSCO-QUANTICO   | 0  | NONE    | 60.00   | 99.00  | 0.00   | 4.64  | 15.65 | 1.48  | 2.22     | 1.00     | SLOPE                   | A        |          | 80.50   | 19.50   | 51,948.84          |
| VA021             | N                       | Y                          | DUMFRIES-NEARSCO-QUANTICO   | 0  | NONE    | 60.00   | 99.00  | 0.00   | 4.64  | 15.65 | 1.48  | 2.22     | 1.00     | SLOPE                   |          |          | 72.00   | 27.00   | 7,184.22           |
| VA021             | Y                       | N                          | DUMFRIES-NEARSCO-QUANTICO   | 0  | NONE    | 60.00   | 99.00  | 0.00   | 4.64  | 15.65 | 1.48  | 2.22     | 1.00     | SLOPE                   |          |          | 72.00   | 27.00   | 9,342.00           |
| VA021             | Y                       | Y                          | DUMFRIES-NEARSCO-QUANTICO   | 0  | NONE    | 60.00   | 99.00  | 0.00   | 4.64  | 15.65 | 1.48  | 2.22     | 1.00     | SLOPE                   |          |          | 72.00   | 27.00   | 60.8               |
| VA021             | Y                       | N                          | ATHOL-EMORY                 | 0  | NONE    | 73.41   | 99.00  | 0.00   | 5.90  | 5.72  | 0.21  | 0.27     | 0.00     | PERM2460                |          |          | 82.10   | 17.90   | 8,450.25           |
| VA021             | Y                       | N                          | ATHOL-EMORY                 | 0  | NONE    | 73.41   | 99.00  | 0.00   | 5.90  | 5.72  | 0.21  | 0.27     | 0.00     | PERM2460                |          |          | 80.00   | 20.00   | 461.94             |
| VA021             | N                       | N                          | SUFFOLK-RUMFORD-EMPORIA     | 0  | NONE    | 60.00   | 99.00  | 0.00   | 5.22  | 9.42  | 0.23  | 0.46     | 0.39     | PERM2460                | PNDDEP   |          | 76.00   | 23.00   | 1,118,273.00       |
| VA021             | N                       | Y                          | SUFFOLK-RUMFORD-EMPORIA     | 0  | NONE    | 60.00   | 99.00  | 0.00   | 5.22  | 9.42  | 0.23  | 0.46     | 0.39     | PERM2460                | PNDDEP   |          | 75.00   | 24.00   | 33,097.97          |
| VA021             | Y                       | N                          | SUFFOLK-RUMFORD-EMPORIA     | 0  | NONE    | 60.00   | 99.00  | 0.00   | 5.22  | 9.42  | 0.23  | 0.46     | 0.39     | PERM2460                | PNDDEP   |          | 75.00   | 24.00   | 14,429.82          |
| VA021             | Y                       | Y                          | SUFFOLK-RUMFORD-EMPORIA     | 0  | NONE    | 60.00   | 99.00  | 0.00   | 5.22  | 9.42  | 0.23  | 0.46     | 0.39     | PERM2460                | PNDDEP   |          | 75.00   | 24.00   | 484.95             |
| VA021             | N                       | N                          | RABIN-HAYESVILLE-OAKHILL    | 0  | NONE    | 59.70   | 99.00  | 0.00   | 6.00  | 13.82 | 3.58  | 1.25     | 0.71     |                         |          |          | 86.40   | 13.60   | 14,352.05          |
| VA021             | Y                       | N                          | RABIN-HAYESVILLE-OAKHILL    | 0  | NONE    | 59.70   | 99.00  | 0.00   | 6.00  | 13.82 | 3.58  | 1.25     | 0.71     |                         |          |          | 76.50   | 23.50   | 16,570.59          |
| VA027             | N                       | N                          | IREDELL-POINDEXTER-PACOLET  | 0  | NONE    | 50.70   | 99.00  | 0.00   | 3.44  | 11.42 | 0.70  | 0.33     | 0.10     | WTDEP                   | PERM2460 |          | 71.50   | 28.50   | 397,662.20         |
| VA027             | Y                       | N                          | IREDELL-POINDEXTER-PACOLET  | 0  | NONE    | 50.70   | 99.00  | 0.00   | 3.44  | 11.42 | 0.70  | 0.33     | 0.10     | WTDEP                   | PERM2460 |          | 72.00   | 27.00   | 14,927.48          |
| VA039             | N                       | N                          | APFUNG-WEDOWEE-LOUISBURG    | 0  | NONE    | 57.50   | 99.00  | 0.00   | 5.67  | 8.69  | 2.69  | 1.03     | 0.00     |                         |          |          | 86.30   | 13.70   | 809,609.30         |
| VA039             | Y                       | N                          | APFUNG-WEDOWEE-LOUISBURG    | 0  | NONE    | 57.50   | 99.00  | 0.00   | 5.67  | 8.69  | 2.69  | 1.03     | 0.00     |                         |          |          | 78.70   | 21.30   | 15,709.57          |
| VA03              | N                       | N                          | CULLEN-WILKES-IREDELL       | 0  | NONE    | 43.70   | 99.00  | 0.00   | 5.78  | 15.25 | 1.84  | 0.77     | 0.63     | SLOPE                   |          |          | 78.70   | 21.30   | 11,977.16          |
| VA03              | Y                       | N                          | CULLEN-WILKES-IREDELL       | 0  | NONE    | 43.70   | 99.00  | 0.00   | 5.78  | 15.25 | 1.84  | 0.77     | 0.63     | SLOPE                   |          |          | 76.40   | 23.60   | 57,348.75          |
| VA03              | N                       | N                          | CHEVACLA-WEHADKES-CONGAREE  | 0  | FREQ    | 60.00   | 99.00  | 0.00   | 1.89  | 1.56  | 0.65  | 0.59     | 0.59     | ANFLOOD                 | WTDEP    | PERM2460 | 67.10   | 32.90   | 85,197.20          |
| VA03              | N                       | Y                          | CHEVACLA-WEHADKES-CONGAREE  | 0  | FREQ    | 60.00   | 99.00  | 0.00   | 1.89  | 1.56  | 0.65  | 0.59     | 0.59     | ANFLOOD                 | WTDEP    | PERM2460 | 62.60   | 37.40   | 2,623.73           |
| VA03              | Y                       | N                          | CHEVACLA-WEHADKES-CONGAREE  | 0  | FREQ    | 60.00   | 99.00  | 0.00   | 1.89  | 1.56  | 0.65  | 0.59     | 0.59     | ANFLOOD                 | WTDEP    | PERM2460 | 62.60   | 37.40   | 18,619.53          |
| VA03              | N                       | N                          | TURBEVILLE-STATE-DOQUE      | 0  | NONE    | 60.00   | 99.00  | 0.00   | 4.96  | 5.49  | 0.84  | 1.39     | 0.67     |                         |          |          | 78.20   | 21.80   | 54,866.85          |
| VA03              | Y                       | N                          | TURBEVILLE-STATE-DOQUE      | 0  | NONE    | 60.00   | 99.00  | 0.00   | 4.96  | 5.49  | 0.84  | 1.39     | 0.67     |                         |          |          | 78.50   | 21.50   | 4,584.57           |
| VA03              | N                       | N                          | BOURNE-COLFAX-CAROLINE      | 0  | NONE    | 60.00   | 99.00  | 0.00   | 1.90  | 4.83  | 0.21  | 0.15     | 0.00     | WTDEP                   | PERM2460 |          | 78.00   | 22.00   | 87,220.70          |
| VA03              | N                       | Y                          | BOURNE-COLFAX-CAROLINE      | 0  | NONE    | 60.00   | 99.00  | 0.00   | 1.90  | 4.83  | 0.21  | 0.15     | 0.00     | WTDEP                   | PERM2460 |          | 70.00   | 29.00   | 960.21             |
| VA03              | Y                       | N                          | BOURNE-COLFAX-CAROLINE      | 0  | NONE    | 60.00   | 99.00  | 0.00   | 1.90  | 4.83  | 0.21  | 0.15     | 0.00     | WTDEP                   | PERM2460 |          | 70.00   | 29.00   | 5,105.97           |
| VA03              | N                       | N                          | CRAYEN-MATTAPONI-LENOIR     | 0  | NONE    | 60.00   | 99.00  | 0.00   | 2.64  | 1.85  | 0.00  | 0.00     | 0.00     | WTDEP                   | PERM2460 |          | 71.40   | 28.60   | 30,335.80          |
| VA03              | N                       | Y                          | CRAYEN-MATTAPONI-LENOIR     | 0  | NONE    | 60.00   | 99.00  | 0.00   | 2.64  | 1.85  | 0.00  | 0.00     | 0.00     | WTDEP                   | PERM2460 |          | 71.40   | 28.60   | 14,876.34          |
| VA03              | Y                       | N                          | CRAYEN-MATTAPONI-LENOIR     | 0  | NONE    | 60.00   | 99.00  | 0.00   | 2.64  | 1.85  | 0.00  | 0.00     | 0.00     | WTDEP                   | PERM2460 |          | 71.40   | 28.60   | 1,604.22           |
| VA034             | N                       | N                          | TETOTUM-DRAGSTON-NEMRO      | 0  | NONE    | 60.00   | 99.00  | 0.00   | 2.09  | 2.22  | 0.65  | 1.22     | 0.00     | WTDEP                   |          |          | 71.60   | 28.40   | 398,895.20         |
| VA034             | N                       | Y                          | TETOTUM-DRAGSTON-NEMRO      | 0  | NONE    | 60.00   | 99.00  | 0.00   | 2.09  | 2.22  | 0.65  | 1.22     | 0.00     | WTDEP                   |          |          | 70.50   | 29.50   | 17,544.13          |
| VA034             | Y                       | N                          | TETOTUM-DRAGSTON-NEMRO      | 0  | NONE    | 60.00   | 99.00  | 0.00   | 2.09  | 2.22  | 0.65  | 1.22     | 0.00     | WTDEP                   |          |          | 70.50   | 29.50   | 92.04              |
| VA034             | Y                       | Y                          | TETOTUM-DRAGSTON-NEMRO      | 0  | NONE    | 60.00   | 99.00  | 0.00   | 2.09  | 2.22  | 0.65  | 1.22     | 0.00     | WTDEP                   |          |          | 70.50   | 29.50   | 141.12             |
| VA037             | N                       | N                          | ROAROCKE-RAINS-BUNOLA       | 0  | FREQ    | 60.00   | 99.00  | -0.00  | 0.87  | 1.00  | 0.00  | 0.00     | 0.34     | ANFLOOD                 | WTDEP    |          | 65.90   | 34.10   | 32,433.90          |
| VA037             | N                       | Y                          | ROAROCKE-RAINS-BUNOLA       | 0  | FREQ    | 60.00   | 99.00  | -0.00  | 0.87  | 1.00  | 0.00  | 0.00     | 0.34     | ANFLOOD                 | WTDEP    |          | 64.00   | 36.00   | 4,000.59           |
| VA038             | N                       | N                          | BOHICKET-NAWNEY-KINSTON     | 5.85   | FREQ    | 60.00   | 99.00  | -0.00  | 1.29  | 0.68  | 0.65  | 1.50     | 0.00     | ANFLOOD                 | WTDEP    |          | 62.50   | 37.50   | 14,333.13          |
| VA038             | N                       | Y                          | BOHICKET-NAWNEY-KINSTON     | 5.85   | FREQ    | 60.00   | 99.00  | -0.00  | 1.29  | 0.68  | 0.65  | 1.50     | 0.00     | ANFLOOD                 | WTDEP    |          | 60.00   | 39.00   | 1,731.55           |
| VA039             | N                       | N                          | FISHMAN-BEACIES-CARTERET    | 0  | FREQ    | 60.00   | 99.00  | -0.16  | 2.60  | 4.46  | 0.00  | 0.00     | 0.00     | ANFLOOD                 | WTDEP    | PERM2460 | 61.60   | 38.40   | 4,250.77           |
| VA039             | N                       | Y                          | FISHMAN-BEACIES-CARTERET    | 0  | FREQ    | 60.00   | 99.00  | -0.16  | 2.60  | 4.46  | 0.00  | 0.00     | 0.00     | ANFLOOD                 | WTDEP    | PERM2460 | 61.60   | 38.40   | 6,119.00           |
| VA040             | N                       | N                          | BOJAC-MOLENA-MUNDEN         | 0  | NONE    | 60.00   | 99.00  | 0.00   | 4.66  | 3.69  | 0.00  | 1.43     | 0.00     |                         |          |          | 78.60   | 21.40   | 392,198.10         |
| VA040             | N                       | Y                          | BOJAC-MOLENA-MUNDEN         | 0  | NONE    | 60.00   | 99.00  | 0.00   | 4.66  | 3.69  | 0.00  | 1.43     | 0.00     |                         |          |          | 77.50   | 22.50   | 18,089.36          |
| VA040             | Y                       | N                          | BOJAC-MOLENA-MUNDEN         | 0  | NONE    | 60.00   | 99.00  | 0.00   | 4.66  | 3.69  | 0.00  | 1.43     | 0.00     |                         |          |          | 77.50   | 22.50   | 3,471.39           |
| VA041             | N                       | N                          | COLFAX-VANCE-HELENA         | 0  | NONE    | 59.50   | 99.00  | 0.00   | 2.40  | 5.04  | 1.76  | 0.00     | 0.00     | WTDEP                   | PERM2460 |          | 72.60   | 27.40   | 11,919.82          |
| VA041             | Y                       | N                          | COLFAX-VANCE-HELENA         | 0  | NONE    | 59.50   | 99.00  | 0.00   | 2.40  | 5.04  | 1.76  | 0.00     | 0.00     | WTDEP                   | PERM2460 |          | 72.60   | 27.40   | 17,775.75          |
| VA042             | N                       | N                          | MAYODAN-CREEDMOOR-PINKSTON  | 0  | NONE    | 57.00   | 99.00  | 0.00   | 4.25  | 6.44  | 1.91  | 0.84     | 0.84     | PERM2460                |          |          | 73.00   | 26.00   | 121,148.00         |
| VA042             | Y                       | N                          | MAYODAN-CREEDMOOR-PINKSTON  | 0  | NONE    | 57.00   | 99.00  | 0.00   | 4.25  | 6.44  | 1.91  | 0.84     | 0.84     | PERM2460                |          |          | 73.00   | 26.00   | 14,097.04          |
| VA043             | N                       | N                          | SLACLE-REHANSVILLE-LAKELAND | 0  | NONE    | 60.00   | 99.00  | 0.00   | 3.35  | 2.80  | 0.62  | 0.86     | 0.86     | WTDEP                   |          |          | 73.50   | 26.50   | 11,016.43          |
| VA043             | N                       | Y                          | SLACLE-REHANSVILLE-LAKELAND | 0  | NONE    | 60.00   | 99.00  | 0.00   | 3.35  | 2.80  | 0.62  | 0.86     | 0.86     | WTDEP                   |          |          | 72.60   | 27.40   | 1,583.30           |
| VA044             | N                       | N                          | BELHAVEN-DELOSS             | 17.1   | RARE    | 60.00   | 99.00  | 0.00   | 0.50  | 0.50  | 0.00  | 3.00     | 0.00     | WTDEP                   |          |          | 79.50   | 20.50   | 4,572.87           |
| VA045             | N                       | N                          | OBOLIOVILLE-NASON-LIONUM    | 0  | NONE    | 57.70   | 99.00  | 0.00   | 5.53  | 6.29  | 1.17  | 0.10     | 0.01     | PERM2460                |          |          | 79.50   | 20.50   | 312,397.70         |
| VA045             | Y                       | N                          | OBOLIOVILLE-NASON-LIONUM    | 0  | NONE    | 57.70   | 99.00  | 0.00   | 5.53  | 6.29  | 1.17  | 0.10     | 0.01     | PERM2460                |          |          | 78.70   | 21.30   | 7,093.57           |
| VA046             | N                       | N                          | CHINCOTEAGUE-MAOOTHIA       | 0  | FREQ    | 60.00   | 99.00  | -1.37  | 1.41  | 0.55  | 0.00  | 9.19     | 0.00     | ANFLOOD                 | WTDEP    |          | 60.00   | 40.00   | 13,434.90          |
| VA046             | N                       | Y                          | CHINCOTEAGUE-MAOOTHIA       | 0  | FREQ    | 60.00   | 99.00  | -1.37  | 1.41  | 0.55  | 0.00  | 9.19     | 0.00     | ANFLOOD                 | WTDEP    |          | 60.00   | 40.00   | 5,107.51           |
| VA051             | N                       | N                          | NEWLAN-BONICKET-DUCKSTON    | 3.51   | NONE    | 59.40   | 99.00  | -0.37  | 3.54  | 9.04  | 0.00  | 0.70     | 0.00     | WTDEP                   |          |          | 67.00   | 33.00   | 1,413.39           |
| VA051             | N                       | Y                          | NEWLAN-BONICKET-DUCKSTON    | 3.51   | NONE    | 59.40   | 99.00  | -0.37  | 3.54  | 9.04  | 0.00  | 0.70     | 0.00     | WTDEP                   |          |          | 67.00   | 33.00   | 11,713.50          |
| VA064             | N                       | N                          | BERUS-WEKERT-BEDNOTON       | 0  | NONE    | 34.35   | 99.00  | 0.00   | 5.21  | 17.11 | 10.30 | 1.73     | 1.36     | ROCKDEP                 | SLOPE    |          | 72.90   | 27.10   | 11,713.50          |
| VA064             | Y                       | N                          | BERUS-WEKERT-BEDNOTON       | 0  | NONE    | 34.35   | 99.00  | 0.00   | 5.21  | 17.11 | 10.30 | 1.73     | 1.36     | ROCKDEP                 | SLOPE    |          | 74.30   | 25.70   | 16,000.20          |

Table 1

### SOIL PROPERTIES AFFECTING SEPTIC SUITABILITY

| MUID <sup>1</sup> | KARST FLAG <sup>1</sup> | CRITICAL AREA <sup>1</sup> | SOIL ASSOCIATION               | PERCENT COMPOSITION-WEIGHTED LIMITATION <sup>2</sup> |         |         |        |        |       |       |       |          |          | LIMITATION <sup>3</sup> |          |          | PERCENT |         | ACRE <sup>4</sup> |               |  |
|-------------------|-------------------------|----------------------------|--------------------------------|--|---------|---------|--------|--------|-------|-------|-------|----------|----------|-------------------------|----------|----------|---------|---------|-------------------|---------------|--|
|                   |                         |                            |                                | SUBTOT   | ANFLOOD | ROCKDEP | PA'DEP | PNDDEP | WTDEP | SLOPE | INCHS | PERM2460 | PERM2460 | 1                       | 2        | 3        | GROUND  | SURFACE |                   |               |  |
|                   |                         |                            |                                |  |         |         |        |        |       |       |       |          |          |                         |          |          |         |         |                   |               |  |
| VA047             | N                       | N                          | LEIOW-BERKS-WEIKERT            | 0  | NONE    | 28.00   | 99.00  | 0.00   | 6.00  | 24.52 | 16.81 | 1.24     | 1.24     |                         |          |          |         |         |                   |               |  |
| VA048             | N                       | N                          | LEIOW-DEKALB-LAIDIO            | 0  | NONE    | 34.35   | 99.00  | 0.00   | 5.54  | 31.79 | 19.06 | 2.94     | 2.94     | ROCKDEP                 | SLOPE    |          | 46.50   | 33.91   |                   | 5,839.15      |  |
| VA049             | Y                       | N                          | LEIOW-DEKALB-LAIDIO            | 0  | NONE    | 34.35   | 99.00  | 0.00   | 5.54  | 31.79 | 19.06 | 2.94     | 2.94     | ROCKDEP                 | SLOPE    |          | 46.10   | 34.91   |                   | 89.40         |  |
| VA049             | N                       | N                          | HAGERSTOWN-DUFFIELD-CLARKSBURG | 0  | NONE    | 49.62   | 99.00  | 0.00   | 5.33  | 6.85  | 2.66  | 0.16     | 0.00     | ROCKDEP                 | SLOPE    |          | 78.00   | 29.41   |                   | 2,441.75      |  |
| VA049             | Y                       | N                          | HAGERSTOWN-DUFFIELD-CLARKSBURG | 0  | NONE    | 49.62   | 99.00  | 0.00   | 5.33  | 6.85  | 2.66  | 0.16     | 0.00     | PERM2460                |          |          | 77.00   | 22.21   |                   | 7,437.92      |  |
| VA070             | N                       | N                          | SCHAFFENAKER-MURRILL-OPEQUON   | 0  | NONE    | 39.42   | 99.00  | 0.00   | 5.75  | 30.72 | 7.43  | 0.31     | 0.43     | PERM2460                |          |          | 77.00   | 22.21   |                   | 140,980.00    |  |
| VA070             | Y                       | N                          | SCHAFFENAKER-MURRILL-OPEQUON   | 0  | NONE    | 39.42   | 99.00  | 0.00   | 5.75  | 30.72 | 7.43  | 0.31     | 0.43     | ROCKDEP                 | PERM2460 | SLOPE    | 66.10   | 33.91   |                   | 719.9         |  |
| VA071             | N                       | Y                          | MANOR-LEVEL-G-CHESTER          | 0  | NONE    | 59.31   | 99.00  | 0.00   | 5.35  | 12.23 | 3.33  | 0.69     | 0.00     | ROCKDEP                 | PERM2460 | SLOPE    | 79.40   | 29.41   |                   | 1,231.66      |  |
| VA071             | N                       | Y                          | MANOR-LEVEL-G-CHESTER          | 0  | NONE    | 59.31   | 99.00  | 0.00   | 5.35  | 12.23 | 3.33  | 0.69     | 0.00     |                         |          |          | 71.40   | 24.61   |                   | 94,291.84     |  |
| VA072             | N                       | Y                          | OPEQUON-BERKS-BLACKTHORN       | 0  | NONE    | 29.52   | 99.00  | 0.00   | 5.39  | 18.98 | 6.99  | 0.81     | 0.74     | ROCKDEP                 | SLOPE    |          | 64.10   | 33.91   |                   | 607.62        |  |
| VA072             | Y                       | Y                          | OPEQUON-BERKS-BLACKTHORN       | 0  | NONE    | 29.52   | 99.00  | 0.00   | 5.39  | 18.98 | 6.99  | 0.81     | 0.74     | ROCKDEP                 | SLOPE    |          | 78.20   | 29.71   |                   | 13,101.60     |  |
| VA073             | N                       | Y                          | MANDY-TRUSSEL-CAULEY           | 0  | NONE    | 38.84   | 99.00  | 0.00   | 3.82  | 13.28 | 13.93 | 0.81     | 0.81     | ROCKDEP                 | WTDEP    | PERM2460 | 63.70   | 36.30   |                   | 30,731.79     |  |
| VA074             | Y                       | Y                          | LEIOW-HAZLETON-DEKALB          | 0  | NONE    | 33.30   | 99.00  | 0.00   | 6.00  | 14.87 | 19.84 | 5.25     | 1.35     | ROCKDEP                 | SLOPE    |          | 77.00   | 22.50   |                   | 11,841.69     |  |
| VA075             | N                       | N                          | CALVIN-DEKALB-HAZLETON         | 0  | NONE    | 35.60   | 99.00  | 0.00   | 5.75  | 16.03 | 14.10 | 3.79     | 3.79     | ROCKDEP                 | SLOPE    |          | 74.00   | 26.00   |                   | 7,851.65      |  |
| VA075             | Y                       | N                          | CALVIN-DEKALB-HAZLETON         | 0  | NONE    | 35.60   | 99.00  | 0.00   | 5.75  | 16.03 | 14.10 | 3.79     | 3.79     | ROCKDEP                 | SLOPE    |          | 61.10   | 30.90   |                   | 11,577.04     |  |
| VIRGINIA AVERAGE  |                         |                            |                                | 0.31   |         | 92.79   | 99.36  | -0.05  | 4.38  | 13.37 | 4.53  | 1.40     | 0.66     |                         |          |          | 71.30   | 24.80   |                   |               |  |
| VIRGINIA SJM      |                         |                            |                                |  |         |         |        |        |       |       |       |          |          |                         |          |          | 71.30   | 24.80   |                   | 13,871,914.88 |  |
| WV002             | N                       | N                          | FREDERICK-CARDO-TIMBERVILLE    | 0  | NONE    | 54.90   | 99.00  | 0.00   | 5.94  | 17.64 | 3.50  | 1.95     | 1.87     | SLOPE                   |          |          | 74.70   | 23.30   |                   | 2,236.00      |  |
| WV002             | Y                       | N                          | FREDERICK-CARDO-TIMBERVILLE    | 0  | NONE    | 54.90   | 99.00  | 0.00   | 5.94  | 17.64 | 3.50  | 1.95     | 1.87     | SLOPE                   |          |          | 74.40   | 23.60   |                   | 3,878.74      |  |
| WV003             | N                       | N                          | CATEACIE-BERKS-SHOHNS          | 0  | NONE    | 36.60   | 99.00  | 0.00   | 5.77  | 15.24 | 8.94  | 2.21     | 2.20     | ROCKDEP                 | SLOPE    |          | 71.90   | 26.10   |                   | 1,219.17      |  |
| WV010             | N                       | N                          | HAGERSTOWN-DUFFIELD-CLARKSBURG | 0  | NONE    | 49.62   | 99.00  | 0.00   | 5.33  | 6.85  | 2.66  | 0.16     | 0.00     | PERM2460                |          |          | 71.80   | 23.20   |                   | 12,153.70     |  |
| WV010             | Y                       | N                          | HAGERSTOWN-DUFFIELD-CLARKSBURG | 0  | NONE    | 49.62   | 99.00  | 0.00   | 5.33  | 6.85  | 2.66  | 0.16     | 0.00     | PERM2460                |          |          | 71.80   | 23.20   |                   | 157,497.70    |  |
| WV022             | N                       | N                          | CATEACIE-SHOHNS-BELMONT        | 0  | NONE    | 42.80   | 99.00  | 0.00   | 6.00  | 19.70 | 10.84 | 0.87     | 0.76     | SLOPE                   |          |          | 72.60   | 27.40   |                   | 46,148.79     |  |
| WV048             | N                       | N                          | WEIKERT-BERKS-DEKALB           | 0  | NONE    | 26.10   | 99.00  | 0.00   | 5.83  | 44.10 | 12.42 | 3.90     | 3.90     | ROCKDEP                 | SLOPE    |          | 78.00   | 29.20   |                   | 412.54        |  |
| WV049             | N                       | N                          | MANDY-TRUSSEL-CAULEY           | 0  | NONE    | 38.84   | 99.00  | 0.00   | 3.82  | 13.28 | 13.93 | 0.81     | 0.81     | ROCKDEP                 | WTDEP    | PERM2460 | 63.70   | 36.30   |                   | 14,129.08     |  |
| WV053             | N                       | N                          | BLACKTHORN-BERKS-FAYWOOD       | 0  | NONE    | 39.30   | 99.00  | 0.00   | 6.00  | 13.47 | 12.10 | 2.99     | 2.99     | ROCKDEP                 | SLOPE    |          | 73.20   | 26.00   |                   | 3,435.83      |  |
| WV053             | Y                       | N                          | BERKS-WEIKERT-LAIDIO           | 0  | NONE    | 29.45   | 99.00  | 0.00   | 5.76  | 22.88 | 10.58 | 2.15     | 2.05     | ROCKDEP                 | SLOPE    |          | 69.10   | 30.90   |                   | 298,535.50    |  |
| WV054             | N                       | N                          | BERKS-WEIKERT-LAIDIO           | 0  | NONE    | 29.45   | 99.00  | 0.00   | 5.76  | 22.88 | 10.58 | 2.15     | 2.05     | ROCKDEP                 | SLOPE    |          | 71.00   | 29.00   |                   | 7,912.80      |  |
| WV054             | Y                       | N                          | OPEQUON-BERKS-BLACKTHORN       | 0  | NONE    | 29.52   | 99.00  | 0.00   | 5.39  | 28.08 | 6.99  | 0.81     | 0.74     | ROCKDEP                 | SLOPE    |          | 66.10   | 33.91   |                   | 25,472.73     |  |
| WV074             | N                       | N                          | DEKALB-GILPIN-RUBBLE LAND      | 0  | NONE    | 34.00   | 99.00  | 0.00   | 5.47  | 26.48 | 15.33 | 4.74     | 4.72     | ROCKDEP                 | SLOPE    |          | 70.30   | 29.70   |                   | 24,614.50     |  |
| WV078             | N                       | N                          | GILPIN-DEKALB-COOKPORT         | 0  | NONE    | 38.30   | 99.00  | 0.00   | 4.87  | 28.34 | 15.89 | 3.25     | 3.18     | ROCKDEP                 | SLOPE    |          | 74.90   | 23.10   |                   | 1,715.88      |  |
| WV079             | N                       | N                          | LEIOW-BERKS-WEIKERT            | 0  | NONE    | 28.00   | 99.00  | 0.00   | 6.00  | 26.52 | 16.81 | 1.24     | 1.24     | ROCKDEP                 | SLOPE    |          | 73.90   | 26.10   |                   | 117,600.50    |  |
| WV079             | Y                       | N                          | LEIOW-BERKS-WEIKERT            | 0  | NONE    | 28.00   | 99.00  | 0.00   | 6.00  | 26.52 | 16.81 | 1.24     | 1.24     | ROCKDEP                 | SLOPE    |          | 66.50   | 33.50   |                   | 46,266.19     |  |
| WV080             | N                       | N                          | SCHAFFENAKER-DRALL-DEKALB      | 0  | NONE    | 34.94   | 99.00  | 0.00   | 6.00  | 31.95 | 11.42 | 5.97     | 1.53     | ROCKDEP                 | SLOPE    |          | 72.30   | 27.70   |                   | 488.16        |  |
| WV080             | Y                       | N                          | SCHAFFENAKER-DRALL-DEKALB      | 0  | NONE    | 34.94   | 99.00  | 0.00   | 6.00  | 31.95 | 11.42 | 5.97     | 1.53     | ROCKDEP                 | SLOPE    |          | 72.10   | 26.90   |                   | 11,500.12     |  |
| WV081             | N                       | N                          | DEKALB-HAZLETON-LAIDIO         | 0  | NONE    | 44.46   | 99.00  | 0.00   | 5.22  | 31.38 | 13.52 | 3.11     | 1.44     | ROCKDEP                 | SLOPE    |          | 71.30   | 28.70   |                   | 994.13        |  |
| WV082             | N                       | N                          | DEKALB-HAZLETON-LAIDIO         | 0  | NONE    | 44.46   | 99.00  | 0.00   | 5.22  | 31.38 | 13.52 | 3.11     | 1.44     | SLOPE                   |          |          | 71.30   | 28.70   |                   | 126,490.40    |  |
| WV082             | Y                       | N                          | MONONGAHELA-CLARKSBURG-ERNEST  | 0  | NONE    | 64.47   | 99.00  | 0.00   | 2.62  | 8.70  | 6.08  | 0.45     | 0.00     | WTDEP                   | PERM2460 |          | 69.20   | 30.80   |                   | 126,115.00    |  |
| WV083             | N                       | N                          | MONONGAHELA-CLARKSBURG-ERNEST  | 0  | NONE    | 64.47   | 99.00  | 0.00   | 2.62  | 8.70  | 6.08  | 0.45     | 0.00     | WTDEP                   | PERM2460 |          | 70.10   | 29.40   |                   | 38,074.46     |  |
| WV083             | Y                       | N                          | POTOMACTOGA-MELVIN             | 0  | OCCAS   | 57.76   | 99.00  | 0.00   | 4.19  | 1.46  | 6.43  | 0.37     | 0.00     | ANFLOOD                 | PERM2460 |          | 68.40   | 30.70   |                   | 6,495.28      |  |
| WV084             | N                       | N                          | POTOMACTOGA-MELVIN             | 0  | OCCAS   | 57.76   | 99.00  | 0.00   | 4.19  | 1.46  | 6.43  | 0.37     | 0.00     | ANFLOOD                 | PERM2460 |          | 68.40   | 31.40   |                   | 35,281.72     |  |
| WV084             | Y                       | N                          | SCHAFFENAKER-MURRILL-OPEQUON   | 0  | NONE    | 39.42   | 99.00  | 0.00   | 5.75  | 30.72 | 7.43  | 0.51     | 0.45     | ROCKDEP                 | PERM2460 | SLOPE    | 64.10   | 33.91   |                   | 5,130.90      |  |
| WV085             | N                       | N                          | SCHAFFENAKER-MURRILL-OPEQUON   | 0  | NONE    | 39.42   | 99.00  | 0.00   | 5.75  | 30.72 | 7.43  | 0.51     | 0.45     | ROCKDEP                 | PERM2460 | SLOPE    | 70.10   | 29.60   |                   | 31,633.40     |  |
| WV085             | Y                       | N                          | LEIOW-DEKALB-LAIDIO            | 0  | NONE    | 34.35   | 99.00  | 0.00   | 5.54  | 31.79 | 19.08 | 2.94     | 2.94     | ROCKDEP                 | SLOPE    |          | 69.10   | 30.90   |                   | 16,334.34     |  |
| WV086             | N                       | N                          | LEIOW-DEKALB-LAIDIO            | 0  | NONE    | 34.35   | 99.00  | 0.00   | 5.54  | 31.79 | 19.08 | 2.94     | 2.94     | ROCKDEP                 | SLOPE    |          | 70.40   | 29.40   |                   | 58,233.15     |  |
| WV086             | Y                       | N                          | MONONGAHELA-POPE-TYGART        | 0  | NONE    | 57.30   | 99.00  | 0.00   | 3.27  | 4.87  | 3.07  | 0.33     | 0.00     | WTDEP                   | PERM2460 |          | 69.90   | 30.10   |                   | 4,704.32      |  |
| WV088             | N                       | N                          | MONONGAHELA-POPE-TYGART        | 0  | NONE    | 57.30   | 99.00  | 0.00   | 3.27  | 4.87  | 3.07  | 0.33     | 0.00     | WTDEP                   | PERM2460 |          | 70.20   | 29.80   |                   | 6,947.16      |  |
| WV088             | Y                       | N                          | FREDERICK-CORYDON-LINDSIDE     | 0  | NONE    | 12.90   | 99.00  | 0.00   | 5.78  | 11.45 | 2.00  | 0.19     | 0.00     | PERM2460                | SLOPE    |          | 71.40   | 28.40   |                   | 3,506.50      |  |
| WV094             | N                       | N                          | FREDERICK-CORYDON-LINDSIDE     | 0  | NONE    | 12.90   | 99.00  | 0.00   | 5.78  | 11.45 | 2.00  | 0.19     | 0.00     | PERM2460                | SLOPE    |          | 74.80   | 23.20   |                   | 2,778.91      |  |
| WV094             | Y                       | N                          | POTOMACCLARKSBURG-ERNEST       | 0  | OCCAS   | 44.29   | 99.00  | 0.00   | 3.70  | 6.43  | 10.68 | 0.32     | 0.00     | ANFLOOD                 | WTDEP    | PERM2460 | 69.80   | 30.20   |                   | 36,637.20     |  |
| WV095             | N                       | N                          | POTOMACCLARKSBURG-ERNEST       | 0  | OCCAS   | 44.29   | 99.00  | 0.00   | 3.70  | 6.43  | 10.68 | 0.32     | 0.00     | ANFLOOD                 | WTDEP    | PERM2460 | 69.00   | 31.00   |                   | 5,726.71      |  |
| WV095             | Y                       | N                          | LEIOW-HAZLETON-DEKALB          | 0  | NONE    | 33.30   | 99.00  | 0.00   | 6.00  | 44.87 | 19.84 | 5.25     | 1.35     | ROCKDEP                 | SLOPE    |          | 71.70   | 28.30   |                   | 614.51        |  |
| WV095             | Y                       | N                          | LEIOW-HAZLETON-DEKALB          | 0  | NONE    | 33.30   | 99.00  | 0.00   | 6.00  | 44.87 | 19.84 | 5.25     | 1.35     | ROCKDEP                 | SLOPE    |          | 70.60   | 29.40   |                   | 28,100.02     |  |
| WV096             | N                       | N                          | DEKALB-BLACKTHORN-ELLIBER      | 0  | NONE    | 47.12   | 99.00  | 0.00   | 5.46  | 32.06 | 12.06 | 2.79     | 1.99     | SLOPE                   |          |          | 72.40   | 27.60   |                   | 84,519.67     |  |

Table 1

SOIL PROPERTIES AFFECTING SEPTIC SUITABILITY

| MUID <sup>1</sup>      | KARE <sup>2</sup> | CRITICAL FLAG <sup>3</sup> | AREA <sup>3</sup> | SOIL ASSOCIATION                 | PERCENT COMPOSITION-WEIGHTED LIMITATION <sup>4</sup> |         |         |        |        |       |       |       | LIMITATION <sup>5</sup> |          |          | PERCENT  |       | ACRES <sup>6</sup> |                |        |           |
|------------------------|-------------------|----------------------------|-------------------|----------------------------------|--|---------|---------|--------|--------|-------|-------|-------|-------------------------|----------|----------|----------|-------|--------------------|----------------|--------|-----------|
|                        |                   |                            |                   |                                  | USTOT  | ANFLOOD | ROCKDIP | PANDEP | PNDDEP | WTDEP | SLOPE | INCR3 | PERM2440                | PERM2440 | 1        | 2        | 3     |                    | GROUND SURFACE |        |           |
|                        |                   |                            |                   |                                  |  |         |         |        |        |       |       |       |                         |          |          |          |       |                    |                |        |           |
| WV096                  | Y                 | N                          |                   | DEKALS-BLACKTHORN-ELLIBER        | 0  | NONE    | 47.12   | 99.00  | 0.00   | 5.16  | 32.06 | 12.04 | 1.79                    | 1.00     | SLOPE    |          |       | 69.60              | 34.40          | 23.15  |           |
| WV097                  | N                 | N                          |                   | CALVIN-DEKALS-HAZLETON           | 0  | NONE    | 35.00   | 99.00  | 0.00   | 5.75  | 46.03 | 14.10 | 1.79                    | 3.79     | ROCKDEP  | SLOPE    |       | 74.00              | 26.00          | 34.06  |           |
| WV097                  | Y                 | N                          |                   | CALVIN-DEKALS-HAZLETON           | 0  | NONE    | 35.00   | 99.00  | 0.00   | 5.75  | 46.03 | 14.10 | 1.79                    | 3.79     | ROCKDEP  | SLOPE    |       | 69.10              | 30.90          | 3.41   |           |
| WV111                  | Y                 | N                          |                   | WAYNESBORO-HAGERSTOWN-RUNTINGTON | 0  | NONE    | 61.17   | 99.00  | 0.00   | 5.10  | 9.49  | 2.47  | 1.00                    | 0.00     | PERM2440 |          |       | 78.40              | 21.60          | 1.38   |           |
| WV114                  | N                 | N                          |                   | EDGEHONT-LADNO-ROCK OUTCROP      | 0  | NONE    | 45.96   | 99.00  | 0.00   | 5.56  | 27.40 | 4.97  | 1.50                    | 0.00     | SLOPE    |          |       | 70.00              | 30.00          | 4.41   |           |
| WV114                  | Y                 | N                          |                   | EDGEHONT-LADNO-ROCK OUTCROP      | 0  | NONE    | 45.96   | 99.00  | 0.00   | 5.56  | 27.40 | 4.97  | 1.50                    | 0.00     | SLOPE    |          |       | 67.70              | 32.30          | 4.1    |           |
| WV118                  | N                 | N                          |                   | BERKS-WEIKERT-BEDINGTON          | 0  | NONE    | 34.35   | 99.00  | 0.00   | 5.21  | 17.11 | 10.30 | 1.73                    | 1.16     | ROCKDEP  | SLOPE    |       | 72.90              | 27.10          | 37.518 |           |
| WV118                  | Y                 | N                          |                   | BERKS-WEIKERT-BEDINGTON          | 0  | NONE    | 34.35   | 99.00  | 0.00   | 5.21  | 17.11 | 10.30 | 1.73                    | 1.16     | ROCKDEP  | SLOPE    |       | 74.30              | 25.70          | 47.341 |           |
| WV119                  | N                 | N                          |                   | VALLEN-DEKALS-DRYPOND            | 0  | NONE    | 33.31   | 99.00  | 0.00   | 5.11  | 31.60 | 20.23 | 1.31                    | 2.11     | ROCKDEP  | SLOPE    |       | 67.90              | 32.10          | 64.721 |           |
| WV119                  | Y                 | N                          |                   | VALLEN-DEKALS-DRYPOND            | 0  | NONE    | 33.31   | 99.00  | 0.00   | 5.11  | 31.60 | 20.23 | 1.31                    | 2.11     | ROCKDEP  | SLOPE    |       | 70.50              | 29.50          | 35.397 |           |
| WV120                  | N                 | N                          |                   | SHOTTOWELL-LADNO-WEIKERT         | 0  | NONE    | 35.90   | 99.00  | 0.00   | 5.19  | 15.00 | 11.84 | 1.09                    | 0.09     | PERM2440 | SLOPE    |       | 70.40              | 29.60          | 7.751  |           |
| WV121                  | N                 | N                          |                   | NOOMAW-JEFFERSON-ALONEVILLE      | 0  | NONE    | 39.55   | 99.00  | 0.00   | 4.19  | 6.27  | 7.20  | 1.07                    | 0.00     | PERM2440 |          |       | 73.70              | 26.30          | 10.537 |           |
| WV122                  | Y                 | N                          |                   | CARSO-CHARLESVILLE-FREDERICK     | 0  | NONE    | 34.40   | 99.00  | 0.00   | 6.00  | 24.30 | 4.74  | 1.70                    | 7.70     | ROCKDEP  | PERM2440 | SLOPE | 60.30              | 11.70          | 24.311 |           |
| WV123                  | N                 | N                          |                   | CATCOTT-MYERSVILLE-ROCK OUTCROP  | 0  | NONE    | 31.00   | 99.00  | 0.00   | 5.72  | 24.30 | 10.70 | 1.30                    | 0.00     | ROCKDEP  | PERM2440 | SLOPE | 67.50              | 32.50          | 1.073  |           |
| WV124                  | N                 | N                          |                   | ARMONT-STUMPTOWN-WEVERTON        | 0  | NONE    | 49.00   | 99.00  | 0.00   | 1.79  | 20.04 | 26.56 | 1.19                    | 0.01     | WTDEP    | PERM2440 | SLOPE | 65.50              | 34.50          | 1.024  |           |
| WV124                  | Y                 | N                          |                   | ARMONT-STUMPTOWN-WEVERTON        | 0  | NONE    | 49.00   | 99.00  | 0.00   | 1.79  | 20.04 | 26.56 | 1.19                    | 0.01     | WTDEP    | PERM2440 | SLOPE | 67.40              | 32.60          | 1.24   |           |
| WV125                  | N                 | N                          |                   | DEKALS-MECKESVILLE-OILPIN        | 0  | NONE    | 28.34   | 99.00  | 0.00   | 5.11  | 20.11 | 16.00 | 1.07                    | 5.19     | ROCKDEP  | SLOPE    |       | 72.20              | 27.80          | 5.83   |           |
| WEST VIRGINIA AVERAGE  |                   |                            |                   |                                  | 0.00   |         | 43.66   | 99.00  | 0.00   | 5.10  | 24.01 | 11.51 | 1.04                    | 1.11     |          |          |       | 71.45              | 28.55          |        |           |
| WEST VIRGINIA SUM      |                   |                            |                   |                                  |  |         |         |        |        |       |       |       |                         |          |          |          |       |                    |                |        | 1,700,653 |
| CHESAPEAKE BAY AVERAGE |                   |                            |                   |                                  | 0.23   |         | 81.10   | 99.97  | -0.02  | 4.18  | 12.92 | 8.97  | 1.01                    | 0.03     |          |          |       | 73.11              | 26.89          |        |           |
| TOTAL                  |                   |                            |                   |                                  |  |         |         |        |        |       |       |       |                         |          |          |          |       |                    |                |        | 4,007,313 |

<sup>1</sup> Map Unit Identifier  
<sup>2</sup> Determined from Geology  
<sup>3</sup> Maryland Critical Area (1000ft from shoreline)  
<sup>4</sup> Calculated as Described in Methods  
<sup>5</sup> Limitations that are interpreted as severe  
<sup>6</sup> Acres of each map unit represented in each state

Table 1

**Table 2. Summary of Ranges of Soils Potentials to Induce Ground Water and Surface Water Effects: State Summary**

| STATE         | Characteristic               | MUID  | Soil Association              | Flag  |    | Percent      |               | Acres      |
|---------------|------------------------------|-------|-------------------------------|-------|----|--------------|---------------|------------|
|               |                              |       |                               | KARST | CA | Ground Water | Surface Water |            |
| Delaware      | Highest Ground Water Effect  | DE015 | Neshaminy-Lehigh-Gleneig      | N     | N  | 80.6         | 19.4          | 179        |
|               | Highest Surface Water Effect | DE009 | Pocomoke-Berryland-Plummer    | N     | Y  | 70.7         | 29.3          | 44         |
|               | State Average                |       |                               |       |    | 76.4         | 23.6          |            |
|               | State Total Acres            |       |                               |       |    |              |               | 454,569    |
| Maryland      | Highest Ground Water Effect  | MD060 | Hayesville-Parker-Peaks       | Y     | N  | 85.1         | 14.9          | 49,071     |
|               | Highest Surface Water Effect | MD054 | Chincoteague-Magotha          | N     | Y  | 60           | 40            | 3,300      |
|               | State Average                |       |                               |       |    | 74.2         | 25.8          |            |
|               | State Total Acres            |       |                               |       |    |              |               | 6,503,120  |
| New York      | Highest Ground Water Effect  | NY094 | Palmyra-Alton-Howard          | Y     | N  | 83.1         | 16.9          | 6,605      |
|               | Highest Surface Water Effect | NY141 | Palms-Carlisle-Edwards        | N     | N  | 58           | 42            | 7,610      |
|               | State Average                |       |                               |       |    | 70.8         | 29.2          |            |
|               | State Total Acres            |       |                               |       |    |              |               | 3,992,139  |
| Pennsylvania  | Highest Ground Water Effect  | PA082 | Edom-Milheim-Calvin           | Y     | N  | 86.1         | 13.9          | 37,961     |
|               | Highest Surface Water Effect | PA039 | Urban Land-Udorthents-Dystroc | N     | N  | 63.6         | 36.4          | 18,333     |
|               | State Average                |       |                               |       |    | 73.5         | 26.5          |            |
|               | State Total Acres            |       |                               |       |    |              |               | 14,364,715 |
| Virginia      | Highest Ground Water Effect  | VA002 | Carbo-Chilhowie-Frederick     | Y     | N  | 88.3         | 11.7          | 84,352     |
|               | Highest Surface Water Effect | VA046 | Chincoteague-Magotha          | N     | N  | 60           | 40            | 13,434     |
|               | State Average                |       |                               |       |    | 73.1         | 26.9          |            |
|               | State Total Acres            |       |                               |       |    |              |               | 13,871,917 |
| West Virginia | Highest Ground Water Effect  | WV122 | Carbo-Chilhowie-Frederick     | Y     | N  | 88.3         | 11.7          | 24,511     |
|               | Highest Surface Water Effect | WV048 | Mandy-Trussel-Gauley          | N     | N  | 63.7         | 36.3          | 14,129     |
|               | State Average                |       |                               |       |    | 71.45        | 28.6          |            |
|               | State total acres            |       |                               |       |    |              |               | 1,700,654  |

Table 2

**Table 3. HOUSING, POPULATION AND WASTE DISPOSAL MEANS BY HOUSING UNIT TYPE: CHESAPEAKE BAY WATERSHED**

**A. ALL OCCUPIED HOUSING UNITS BY HOUSING UNIT TYPE AND MEANS OF WASTE DISPOSAL**

| 1. BY HOUSING TYPE   |           |         | 2. BY WASTE DISPOSAL TYPE |           |         |
|--|-----------|---------|---------------------------|-----------|---------|
|  | Number    | Percent |                           | Number    | Percent |
| TOTAL  | 6,232,562 | 100.0   | TOTAL                     | 5,232,510 | 100.0   |
| Urban  | 3,842,751 | 72.6    | Sewer                     | 3,965,950 | 74.9    |
| Rural  | 1,395,514 | 26.4    | Septic                    | 1,265,447 | 23.9    |
| Farm   | 54,318    | 1.0     | Other                     | 61,186    | 1.2     |
| <b>Urban</b>   |           |         | <b>Sewer</b>              |           |         |
| Total  | 3,842,751 | 100.0   | Total                     | 3,965,950 | 100.0   |
| Sewer  | 3,637,562 | 94.7    | Urban                     | 3,637,562 | 91.7    |
| Septic   | 193,785   | 6.0     | Rural                     | 327,223   | 8.3     |
| Other  | 11,404    | 0.3     | Farm                      | 1,165     | 0.0     |
| <b>Rural</b>   |           |         | <b>Septic</b>             |           |         |
| Total  | 1,395,514 | 100.0   | Total                     | 1,265,447 | 100.0   |
| Sewer  | 327,223   | 23.4    | Urban                     | 193,785   | 15.3    |
| Septic   | 1,021,630 | 73.2    | Rural                     | 1,021,630 | 80.7    |
| Other  | 46,661    | 3.3     | Farm                      | 50,032    | 4.0     |
| <b>Farm</b>  |           |         | <b>Other</b>              |           |         |
| Total  | 54,318    | 100.0   | Total                     | 61,186    | 100.0   |
| Sewer  | 1,165     | 2.1     | Urban                     | 11,404    | 18.6    |
| Septic   | 50,032    | 92.1    | Rural                     | 46,661    | 76.3    |
| Other  | 3,121     | 5.7     | Farm                      | 3,121     | 5.1     |
| <b>TOTAL NUMBER OF HOUSING UNITS USING SEPTIC AND OTHER MEANS OF DISPOSAL:</b> |           |         | <b>1,326,633</b>          |           |         |
| <b>PERCENT OF TOTAL HOUSING UNITS USING SEPTIC AND OTHER MEANS:</b>            |           |         | <b>25.87</b>              |           |         |

**B. ALL POPULATION BY HOUSING UNIT TYPE AND WASTE DISPOSAL MEANS**

| 1. BY HOUSING TYPE  |            |         | 2. BY WASTE DISPOSAL TYPE |            |         |
|---|------------|---------|---------------------------|------------|---------|
|   | Number     | Percent |                           | Number     | Percent |
| TOTAL   | 13,787,250 | 100.0   | TOTAL                     | 13,787,249 | 100.0   |
| Urban   | 9,773,926  | 70.9    | Sewer                     | 10,013,760 | 72.6    |
| Rural   | 3,849,732  | 27.9    | Septic                    | 3,602,935  | 26.1    |
| Farm  | 163,591    | 1.2     | Other                     | 170,554    | 1.2     |
| <b>Urban</b>  |            |         | <b>Sewer</b>              |            |         |
| Total   | 9,773,926  | 100.0   | Total                     | 10,013,760 | 100.0   |
| Sewer   | 8,185,018  | 84.8    | Urban                     | 8,185,018  | 81.7    |
| Septic  | 551,783    | 5.6     | Rural                     | 825,592    | 8.2     |
| Other   | 37,125     | 0.4     | Farm                      | 3,150      | 0.0     |
| <b>Rural</b>  |            |         | <b>Septic</b>             |            |         |
| Total   | 3,849,732  | 100.0   | Total                     | 3,602,935  | 100.0   |
| Sewer   | 825,592    | 21.4    | Urban                     | 551,783    | 15.3    |
| Septic  | 2,899,893  | 75.3    | Rural                     | 2,899,893  | 80.5    |
| Other   | 124,247    | 3.2     | Farm                      | 151,259    | 4.2     |
| <b>Farm</b>   |            |         | <b>Other</b>              |            |         |
| Total   | 163,591    | 100.0   | Total                     | 170,554    | 100.0   |
| Sewer   | 3,150      | 1.9     | Urban                     | 37,125     | 21.8    |
| Septic  | 151,259    | 92.5    | Rural                     | 124,247    | 72.8    |
| Other   | 9,182      | 5.6     | Farm                      | 9,182      | 5.4     |
| <b>TOTAL POPULATION USING SEPTIC AND OTHER MEANS OF DISPOSAL:</b> |            |         | <b>3,773,489</b>          |            |         |
| <b>PERCENT OF TOTAL POPULATIONS USING SEPTIC AND OTHER MEANS:</b> |            |         | <b>27.37</b>              |            |         |

**C. PERSONS PER HOUSING UNIT USING SEPTIC OR OTHER MEANS OF DISPOSAL**

| 1. BY HOUSING TYPE                |            |           | Persons/<br>Housing<br>Unit |
|-----------------------------------|------------|-----------|-----------------------------|
|                                   | Population | Housing   |                             |
| Total                             | 3,773,489  | 1,326,633 | 2.84                        |
| Urban                             | 588,908    | 205,189   | 2.87                        |
| Rural                             | 3,021,140  | 1,068,291 | 2.83                        |
| Farm                              | 160,441    | 53,153    | 3.02                        |
| <b>2. BY WASTE DISPOSAL MEANS</b> |            |           | Persons/<br>Housing<br>Unit |
|                                   | Population | Housing   |                             |
| Total                             | 3,773,489  | 1,326,633 | 2.84                        |
| Septic                            | 3,602,935  | 1,265,447 | 2.85                        |
| Other                             | 170,554    | 61,186    | 2.79                        |

**TABLE 4. HOUSING UNITS AND POPULATION BY  
WASTE DISPOSAL MEANS AND HOUSING TYPES:  
STATE SUMMARIES**

| 1. Housing Units                 |           |            |         |           |       |            | SUBTOTAL  |
|----------------------------------|-----------|------------|---------|-----------|-------|------------|-----------|
| A. HOUSING UNITS USING SEWER AS: |           |            |         |           |       |            |           |
| STATE                            | URBAN     | % Subtotal | RURAL   | %Subtotal | FARM  | % Subtotal |           |
| DELAWARE Total                   | 3,723     | 55.4       | 2,987   | 44.2      | 27    | 0.4        | 6,717     |
| DISTRICT OF COLUMBIA Total       | 247,933   | 100.0      | 0       | 0.0       | 0     | 0.0        | 247,933   |
| MARYLAND Total                   | 1,353,538 | 98.0       | 55,612  | 3.9       | 171   | 0.0        | 1,409,320 |
| NEW YORK Total                   | 113,322   | 87.2       | 16,680  | 12.8      | 13    | 0.0        | 130,015   |
| PENNSYLVANIA Total               | 621,947   | 78.4       | 170,522 | 21.5      | 657   | 0.1        | 793,128   |
| VIRGINIA Total                   | 1,285,747 | 95.1       | 66,412  | 4.9       | 264   | 0.0        | 1,352,463 |
| WEST VIRGINIA Total              | 11,312    | 42.9       | 15,031  | 57.0      | 32    | 0.1        | 26,375    |
| Grand Total                      | 3,637,562 | 91.7       | 327,222 | 8.3       | 1,165 | 0.0        | 3,965,949 |

**TABLE 4. HOUSING UNITS AND POPULATION BY  
WASTE DISPOSAL MEANS AND HOUSING TYPES:  
STATE SUMMARIES**

| 1. Housing Units                  |         |            |           |            |        |           | SUBTOTAL  |
|-----------------------------------|---------|------------|-----------|------------|--------|-----------|-----------|
| B. HOUSING UNITS USING SEPTIC AS: |         |            |           |            |        |           |           |
| STATE                             | URBAN   | % Subtotal | RURAL     | % Subtotal | FARM   | %Subtotal |           |
| DELAWARE Total                    | 555     | 3.1        | 16,447    | 91.5       | 984    | 5.4       | 17,966    |
| DISTRICT OF COLUMBIA Total        | 503     | 100.0      | 0         | 0.0        | 0      | 0.0       | 503       |
| MARYLAND Total                    | 76,333  | 25.5       | 219,309   | 71.3       | 10,057 | 3.3       | 307,699   |
| NEW YORK Total                    | 11,025  | 9.9        | 96,598    | 86.6       | 3,859  | 3.6       | 111,471   |
| PENNSYLVANIA Total                | 26,785  | 6.3        | 378,742   | 89.1       | 19,432 | 4.8       | 424,960   |
| VIRGINIA Total                    | 75,625  | 20.7       | 275,064   | 75.4       | 14,028 | 3.8       | 364,717   |
| WEST VIRGINIA Total               | 888     | 2.8        | 35,480    | 83.0       | 1,692  | 4.4       | 38,130    |
| Grand Total                       | 193,785 | 15.3       | 1,021,630 | 80.7       | 50,032 | 4.0       | 1,265,447 |

**TABLE 4. HOUSING UNITS AND POPULATION BY  
WASTE DISPOSAL MEANS AND HOUSING TYPES:  
STATE SUMMARIES**

| STATE                      | 1. Housing Units  |           |        |           |       |           | SUBTOTAL | TOTAL     |
|----------------------------|---|-----------|--------|-----------|-------|-----------|----------|-----------|
|                            | C. HOUSING UNITS USING OTHER MEANS OF NON-SEWERED TREATMENT AS: |           |        |           |       |           |          |           |
|                            | URBAN   | %Subtotal | RURAL  | %Subtotal | FARM  | %Subtotal |          |           |
| DELAWARE Total             | 28  | 5.0       | 466    | 84.0      | 61    | 11.0      | 555      | 25,238    |
| DISTRICT OF COLUMBIA Total | 1,198   | 100.0     | 0      | 0.0       | 0     | 0.0       | 1,198    | 248,635   |
| MARYLAND Total             | 5,562   | 41.2      | 7,519  | 55.7      | 430   | 3.2       | 13,510   | 1,730,530 |
| NEW YORK Total             | 100   | 3.5       | 2,424  | 85.3      | 318   | 11.2      | 2,841    | 244,327   |
| PENNSYLVANIA Total         | 1,324   | 7.4       | 15,675 | 87.5      | 912   | 5.1       | 17,912   | 1,235,997 |
| VIRGINIA Total             | 3,132   | 14.3      | 17,715 | 80.8      | 1,069 | 4.9       | 21,916   | 1,739,098 |
| WEST VIRGINIA Total        | 61  | 1.9       | 2,862  | 88.0      | 330   | 10.1      | 3,253    | 67,758    |
| Grand Total                | 11,404  | 18.6      | 46,661 | 76.3      | 3,120 | 6.1       | 61,186   | 8,292,581 |

**TABLE 4. HOUSING UNITS AND POPULATION BY  
WASTE DISPOSAL MEANS AND HOUSING TYPES:  
STATE SUMMARIES**

| 2. Population                 |           |              |         |              |       |                              |           |            |            |
|-------------------------------|-----------|--------------|---------|--------------|-------|------------------------------|-----------|------------|------------|
| A. POPULATION USING SEWER AS: |           |              |         |              |       | TOTAL POPULATION USING SEWER |           |            |            |
| STATE                         | URBAN     | % Mean Total | RURAL   | % Mean Total | FARM  | % Mean Total                 | MIN       | MEAN       | MAX        |
| DELAWARE Total                | 9,194     | 55.5         | 7,336   | 44.3         | 42    | 0.3                          | 13,479    | 16,574     | 19,997     |
| DISTRICT OF COLUMBIA Total    | 560,472   | 100.0        | 0       | 0.0          | 0     | 0.0                          | 552,286   | 560,472    | 568,661    |
| MARYLAND Total                | 3,538,604 | 96.1         | 141,318 | 3.8          | 508   | 0.0                          | 3,529,308 | 3,680,777  | 3,638,672  |
| NEW YORK Total                | 270,101   | 87.2         | 39,527  | 12.8         | 35    | 0.0                          | 281,728   | 309,664    | 341,095    |
| PENNSYLVANIA Total            | 1,491,318 | 77.7         | 428,720 | 22.2         | 1,878 | 0.1                          | 1,782,184 | 1,919,869  | 2,062,908  |
| VIRGINIA Total                | 3,288,843 | 94.9         | 175,125 | 5.1          | 611   | 0.0                          | 3,302,032 | 3,464,579  | 3,634,437  |
| WEST VIRGINIA Total           | 28,484    | 42.8         | 35,988  | 57.2         | 77    | 0.1                          | 50,951    | 62,128     | 74,429     |
| Grand Total                   | 9,185,018 | 81.7         | 825,592 | 8.2          | 3,180 | 0.0                          | 9,511,968 | 10,014,162 | 10,540,218 |

**TABLE 4. HOUSING UNITS AND POPULATION BY WASTE DISPOSAL MEANS AND HOUSING TYPES: STATE SUMMARIES**

| 2. Population  |                |              |           |              |         |              |           |           |           |
|--|----------------|--------------|-----------|--------------|---------|--------------|-----------|-----------|-----------|
| B. POPULATION USING SEPTIC AS: TOTAL POPULATION USING SEPTIC |                |              |           |              |         |              |           |           |           |
| STATE  | URBAN          | % Mean Total | RURAL     | % Mean Total | FARM    | % Mean Total | MIN       | MEAN      | MAX       |
|  | DELAWARE Total | 1,625        | 3.2       | 46,482       | 91.6    | 2,618        | 5.2       | 48,334    | 50,724    |
| DISTRICT OF COLUMBIA Total                                   | 1,417          | 100.0        | 0         | 0.0          | 0       | 0.0          | 0         | 1,417     | 4,244     |
| MARYLAND Total   | 229,691        | 25.5         | 641,809   | 71.3         | 28,782  | 3.2          | 758,587   | 900,143   | 1,057,245 |
| NEW YORK Total   | 30,734         | 9.8          | 270,869   | 88.4         | 11,805  | 3.8          | 278,482   | 313,408   | 350,397   |
| PENNSYLVANIA Total   | 74,743         | 6.2          | 1,072,805 | 88.4         | 65,728  | 5.4          | 1,087,984 | 1,213,144 | 1,388,640 |
| VIRGINIA Total   | 210,968        | 20.7         | 788,869   | 75.6         | 37,838  | 3.7          | 840,046   | 1,017,275 | 1,209,074 |
| WEST VIRGINIA Total  | 2,805          | 2.4          | 89,881    | 83.2         | 4,837   | 4.4          | 91,409    | 108,953   | 122,895   |
| Grand Total  | 651,783        | 15.3         | 2,899,893 | 80.5         | 151,259 | 4.2          | 3,080,823 | 3,803,084 | 4,187,817 |

**TABLE 4. HOUSING UNITS AND POPULATION BY WASTE DISPOSAL MEANS AND HOUSING TYPES: STATE SUMMARIES**

| 2. Population              |   |              |         |              |       |              |                                    |         |         |                  |
|----------------------------|---|--------------|---------|--------------|-------|--------------|------------------------------------|---------|---------|------------------|
| STATE                      | C. POPULATION USING OTHER MEANS OF DISPOSAL AS: |              |         |              |       |              | TOTAL POPULATION USING OTHER MEANS |         |         | TOTAL POPULATION |
|                            | URBAN   | % Mean Total | RURAL   | % Mean Total | FARM  | % Mean Total | MN                                 | MEAN    | MAX     |                  |
|                            | DELAWARE Total                                  | 101          | 6.0     | 1,368        | 81.8  | 208          | 12.4                               | 163     | 1,676   |                  |
| DISTRICT OF COLUMBIA Total | 4,063   | 100.0        | 0       | 0.0          | 0     | 0.0          | 123                                | 4,063   | 10,090  | 585,952          |
| MARYLAND Total             | 18,223  | 45.9         | 20,155  | 50.7         | 1,345 | 3.4          | 2,270                              | 38,724  | 98,050  | 4,620,644        |
| NEW YORK Total             | 391   | 5.1          | 6,357   | 83.5         | 864   | 11.3         | 373                                | 7,611   | 19,838  | 630,662          |
| PENNSYLVANIA Total         | 4,209   | 8.6          | 41,152  | 84.1         | 3,589 | 7.4          | 11,594                             | 48,980  | 97,932  | 3,182,073        |
| VIRGINIA Total             | 10,020  | 16.8         | 47,887  | 79.2         | 2,558 | 4.2          | 7,668                              | 60,485  | 130,183 | 4,542,319        |
| WEST VIRGINIA Total        | 119   | 1.5          | 7,329   | 91.0         | 608   | 7.5          | 1,588                              | 8,058   | 15,893  | 177,137          |
| Grand Total                | 37,125  | 21.8         | 124,247 | 72.8         | 9,162 | 5.4          | 23,777                             | 170,656 | 373,828 | 13,767,762       |

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                 | 1. Housing Units             |            |         |            |      |            | SUBTOTAL  |
|--|-------|-----------------|------------------------------|------------|---------|------------|------|------------|-----------|
| STATE  | FIPS  | COUNTY          | a. HOUSING UNITS USING SEWER |            |         |            |      |            |           |
|  |       |                 | AS:                          |            |         |            |      |            |           |
|  |       |                 | URBAN                        | % Subtotal | RURAL   | % Subtotal | FARM | % Subtotal |           |
| DELAWARE   | 10001 | KENT            | 23.0                         | 2.7        | 817.9   | 97.3       | 12.1 | 1.4        | 840.9     |
| DELAWARE   | 10003 | NEW CASTLE      | 391.1                        | 85.0       | 68.0    | 14.8       | 0.8  | 0.2        | 459.9     |
| DELAWARE   | 10005 | SUSSEX          | 3,309.0                      | 61.2       | 2,080.9 | 38.5       | 14.3 | 0.3        | 5,404.2   |
| DISTRICT OF COLUMBIA   | 11001 | WASHINGTON      | 247,933.1                    | 100.0      | -       | -          | -    | -          | 247,933.1 |
| MARYLAND   | 24001 | ALLEGANY        | 19,934.0                     | 80.3       | 4,879.6 | 19.7       | 3.9  | 0.0        | 24,817.5  |
| MARYLAND   | 24003 | ANNE ARUNDEL    | 110,536.7                    | 98.9       | 1,180.5 | 1.1        | 7.3  | 0.0        | 111,724.4 |
| MARYLAND   | 24005 | BALTIMORE       | 235,445.5                    | 99.2       | 1,833.5 | 0.8        | -    | -          | 237,279.0 |
| MARYLAND   | 24009 | CALVERT         | 65.8                         | 3.0        | 2,107.8 | 96.9       | 2.2  | 0.1        | 2,175.8   |
| MARYLAND   | 24011 | CAROLINE        | 1,063.8                      | 31.8       | 2,261.4 | 57.7       | 15.5 | 0.5        | 3,340.7   |
| MARYLAND   | 24013 | CARROLL         | 12,508.2                     | 76.6       | 3,809.9 | 23.3       | 3.2  | 0.0        | 16,321.3  |
| MARYLAND   | 24015 | CECIL           | 3,572.6                      | 39.1       | 5,540.7 | 60.7       | 15.8 | 0.2        | 9,129.1   |
| MARYLAND   | 24017 | CHARLES         | 17,885.2                     | 92.4       | 1,465.9 | 7.6        | 8.1  | 0.0        | 19,359.2  |
| MARYLAND   | 24019 | DORCHESTER      | 4,710.7                      | 72.8       | 1,752.9 | 27.1       | 11.2 | 0.2        | 6,474.8   |
| MARYLAND   | 24021 | FREDERICK       | 25,608.9                     | 87.7       | 3,598.3 | 12.3       | -    | -          | 29,207.2  |
| MARYLAND   | 24023 | GARRETT         | -                            | -          | 282.9   | 99.5       | 1.4  | 0.5        | 284.4     |
| MARYLAND   | 24025 | HARFORD         | 37,310.2                     | 96.0       | 1,567.4 | 4.0        | -    | -          | 38,877.6  |
| MARYLAND   | 24027 | HOWARD          | 56,357.0                     | 99.1       | 493.9   | 0.9        | 8.7  | 0.0        | 56,859.6  |
| MARYLAND   | 24029 | KENT            | 1,290.1                      | 41.0       | 1,835.8 | 58.4       | 17.2 | 0.5        | 3,143.1   |
| MARYLAND   | 24031 | MONTGOMERY      | 263,798.2                    | 99.4       | 1,615.0 | 0.6        | 9.5  | 0.0        | 265,422.6 |
| MARYLAND   | 24033 | PRINCE GEORGE'S | 246,078.0                    | 99.2       | 2,030.9 | 0.8        | -    | -          | 248,108.9 |
| MARYLAND   | 24035 | QUEEN ANNES     | -                            | -          | 3,717.4 | 99.5       | 19.2 | 0.5        | 3,736.6   |
| MARYLAND   | 24037 | SAINT MARY'S    | 4,529.3                      | 56.9       | 3,425.8 | 43.0       | 6.0  | 0.1        | 7,961.1   |
| MARYLAND   | 24039 | SOMERSET        | 1,150.2                      | 35.5       | 2,080.0 | 64.2       | 7.8  | 0.2        | 3,238.0   |
| MARYLAND   | 24041 | TALBOT          | 3,830.5                      | 61.8       | 2,362.7 | 38.1       | 9.4  | 0.2        | 6,202.6   |
| MARYLAND   | 24043 | WASHINGTON      | 24,541.1                     | 89.3       | 2,920.7 | 10.6       | 8.0  | 0.0        | 27,469.7  |

Table 5

HOUSING UNITS AS URBAN, RURAL AND FARM-  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

1. Housing Units

|              |       |                | a. HOUSING UNITS USING SEWER |            |         |            |      |            | SUBTOTAL  |
|--------------|-------|----------------|------------------------------|------------|---------|------------|------|------------|-----------|
| AS:          |       |                | URBAN                        |            | RURAL   |            | FARM |            |           |
| STATE        | FIPS  | COUNTY         | URBAN                        | % Subtotal | RURAL   | % Subtotal | FARM | % Subtotal |           |
| MARYLAND     | 24045 | WICOMICO       | 9,375.0                      | 70.4       | 3,921.7 | 29.5       | 13.4 | 0.1        | 13,310.1  |
| MARYLAND     | 24047 | WORCESTER      | 1,611.7                      | 63.4       | 927.2   | 36.5       | 3.0  | 0.1        | 2,541.8   |
| MARYLAND     | 24510 | BALTIMORE CITY | 272,335.0                    | 100.0      | -       | -          | -    | -          | 272,335.0 |
| NEW YORK     | 36003 | ALLEGANY       | 291.2                        | 87.1       | 43.0    | 12.9       | -    | -          | 334.2     |
| NEW YORK     | 36007 | BROOME         | 55,539.6                     | 95.4       | 2,706.1 | 4.6        | -    | -          | 58,245.8  |
| NEW YORK     | 36011 | CAYUGA         | -                            | -          | 0.2     | 99.6       | 0.0  | 0.4        | 0.2       |
| NEW YORK     | 36015 | CHEMUNG        | 21,298.1                     | 97.6       | 520.1   | 2.4        | -    | -          | 21,818.2  |
| NEW YORK     | 36017 | CHENANGO       | 3,229.6                      | 54.6       | 2,680.5 | 45.3       | 3.5  | 0.1        | 5,913.6   |
| NEW YORK     | 36023 | CORTLAND       | 7,819.2                      | 81.7       | 1,749.4 | 18.3       | 1.3  | 0.0        | 9,570.0   |
| NEW YORK     | 36025 | DELAWARE       | 1,860.5                      | 93.8       | 123.1   | 6.2        | -    | -          | 1,983.6   |
| NEW YORK     | 36043 | HERKIMER       | -                            | -          | 37.3    | 99.8       | 0.1  | 0.2        | 37.3      |
| NEW YORK     | 36051 | LIVINGSTON     | -                            | -          | -       | -          | -    | -          | -         |
| NEW YORK     | 36053 | MADISON        | 912.9                        | 91.4       | 85.4    | 8.5        | 0.1  | 0.0        | 998.3     |
| NEW YORK     | 36065 | ONEIDA EAST    | 62.7                         | 33.3       | 124.8   | 66.3       | 0.7  | 0.4        | 188.1     |
| NEW YORK     | 36067 | ONONDAGA       | -                            | -          | 286.0   | 100.0      | 0.0  | 0.0        | 286.1     |
| NEW YORK     | 36069 | ONTARIO        | -                            | -          | 0.7     | 99.8       | 0.0  | 0.2        | 0.7       |
| NEW YORK     | 36077 | OTSEGO         | 4,304.3                      | 62.0       | 2,631.3 | 37.9       | 6.6  | 0.1        | 6,942.2   |
| NEW YORK     | 36095 | SCHOHARIE      | -                            | -          | 2.9     | 99.7       | 0.0  | 0.3        | 2.9       |
| NEW YORK     | 36097 | SCHUYLER       | -                            | -          | 14.7    | 100.0      | -    | -          | 14.7      |
| NEW YORK     | 36101 | STEUBEN        | 12,372.8                     | 73.9       | 4,360.8 | 26.1       | -    | -          | 16,733.5  |
| NEW YORK     | 36107 | TIOGA          | 5,631.2                      | 83.6       | 1,106.3 | 16.4       | 0.7  | 0.0        | 6,738.1   |
| NEW YORK     | 36109 | TOMPKINS       | -                            | -          | 205.4   | 99.9       | 0.1  | 0.1        | 205.5     |
| NEW YORK     | 36123 | YATES          | -                            | -          | 1.6     | 100.0      | -    | -          | 1.6       |
| PENNSYLVANIA | 42001 | ADAMS          | 4,926.7                      | 36.5       | 8,566.6 | 63.5       | 7.9  | 0.1        | 13,501.1  |
| PENNSYLVANIA | 42009 | BEDFORD        | 1,461.3                      | 32.0       | 3,104.1 | 67.9       | 7.3  | 0.2        | 4,572.8   |

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRJ-CHESAPEAKE, Inc.

1. Housing Units

|              |       |            | a. HOUSING UNITS USING SEWER |            |          |            |       |            | SUBTOTAL  |
|--------------|-------|------------|------------------------------|------------|----------|------------|-------|------------|-----------|
| AS:          |       |            |                              |            |          |            |       |            |           |
| STATE        | FIPS  | COUNTY     | URBAN                        | % Subtotal | RURAL    | % Subtotal | FARM  | % Subtotal |           |
| PENNSYLVANIA | 42011 | BERKS      | 42.6                         | 8.0        | 490.4    | 91.8       | 1.2   | 0.2        | 534.2     |
| PENNSYLVANIA | 42013 | BLAIR      | 31,190.6                     | 84.8       | 5,602.1  | 15.2       | -     | -          | 36,792.7  |
| PENNSYLVANIA | 42015 | BRADFORD   | 4,659.2                      | 62.3       | 2,819.4  | 37.7       | 5.7   | 0.1        | 7,484.3   |
| PENNSYLVANIA | 42021 | CAMBRIA    | 1,015.0                      | 15.6       | 5,483.5  | 84.2       | 12.6  | 0.2        | 5,511.1   |
| PENNSYLVANIA | 42023 | CAMERON    | 1,119.7                      | 86.0       | 182.2    | 14.0       | 0.0   | 0.0        | 1,302.0   |
| PENNSYLVANIA | 42025 | CARBON     | -                            | -          | 0.0      | 100.0      | -     | -          | 0.0       |
| PENNSYLVANIA | 42027 | CENTRE     | 23,584.9                     | 80.0       | 5,868.3  | 19.9       | 18.9  | 0.1        | 29,472.2  |
| PENNSYLVANIA | 42029 | CHESTER    | 1,587.9                      | 70.4       | 666.6    | 29.6       | 1.1   | 0.0        | 2,255.7   |
| PENNSYLVANIA | 42033 | CLEARFIELD | 4,052.9                      | 48.9       | 4,230.3  | 51.1       | -     | -          | 8,283.2   |
| PENNSYLVANIA | 42035 | CLINTON    | 3,121.6                      | 34.8       | 5,840.2  | 55.1       | 14.6  | 0.2        | 8,976.3   |
| PENNSYLVANIA | 42037 | COLUMBIA   | 8,266.7                      | 81.4       | 1,884.8  | 18.6       | 5.7   | 0.1        | 10,157.2  |
| PENNSYLVANIA | 42041 | CUMBERLAND | 46,818.3                     | 86.1       | 7,557.1  | 13.9       | 29.7  | 0.1        | 54,405.0  |
| PENNSYLVANIA | 42043 | DAUPHIN    | 70,772.0                     | 92.1       | 6,013.3  | 7.8        | 35.4  | 0.0        | 76,820.6  |
| PENNSYLVANIA | 42047 | ELK        | 179.7                        | 26.7       | 493.4    | 73.3       | 0.0   | 0.0        | 673.1     |
| PENNSYLVANIA | 42055 | FRANKLIN   | 14,744.9                     | 51.0       | 14,113.8 | 48.9       | 25.2  | 0.1        | 28,883.9  |
| PENNSYLVANIA | 42057 | FULTON     | -                            | -          | 1,005.7  | 99.8       | 2.2   | 0.2        | 1,007.9   |
| PENNSYLVANIA | 42061 | HUNTINGDON | 3,834.4                      | 64.4       | 2,119.6  | 35.6       | 2.4   | 0.0        | 5,956.4   |
| PENNSYLVANIA | 42063 | INDIANA    | -                            | -          | 89.7     | 100.0      | 0.0   | 0.0        | 89.7      |
| PENNSYLVANIA | 42065 | JEFFERSON  | -                            | -          | 0.0      | 100.0      | -     | -          | 0.0       |
| PENNSYLVANIA | 42067 | JUNIATA    | -                            | -          | 1,948.8  | 99.6       | 7.3   | 0.4        | 1,956.2   |
| PENNSYLVANIA | 42069 | LACKAWANNA | 70,508.7                     | 96.0       | 2,970.0  | 4.0        | -     | -          | 73,478.8  |
| PENNSYLVANIA | 42071 | LANCASTER  | 89,598.1                     | 85.8       | 14,609.5 | 14.0       | 246.0 | 0.2        | 104,453.6 |
| PENNSYLVANIA | 42075 | LEBANON    | 16,704.9                     | 66.8       | 8,301.1  | 33.2       | 5.3   | 0.0        | 25,011.3  |
| PENNSYLVANIA | 42079 | LUZERNE    | 90,022.5                     | 89.4       | 10,643.2 | 10.6       | 38.0  | 0.0        | 100,703.7 |
| PENNSYLVANIA | 42081 | LYCOMING   | 22,868.2                     | 90.3       | 2,446.8  | 9.7        | -     | -          | 25,315.0  |

Table 5

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                | 1. Housing Units             |            |          |            |      |            |          |
|--|-------|----------------|------------------------------|------------|----------|------------|------|------------|----------|
|  |       |                | a. HOUSING UNITS USING SEWER |            |          |            |      |            |          |
|  |       |                | AS:                          |            |          |            |      |            |          |
| STATE  | FIPS  | COUNTY         | URBAN                        | % Subtotal | RURAL    | % Subtotal | FARM | % Subtotal | SUBTOTAL |
| PENNSYLVANIA   | 42083 | MCKEAN         | -                            | -          | 4.7      | 100.0      | 0.0  | 0.0        | 4.7      |
| PENNSYLVANIA   | 42087 | MIFFLIN        | 4,207.4                      | 41.1       | 5,991.5  | 58.5       | 48.7 | 0.5        | 10,247.6 |
| PENNSYLVANIA   | 42093 | MONTOUR        | 3,201.3                      | 91.1       | 312.6    | 8.9        | 1.6  | 0.0        | 3,515.5  |
| PENNSYLVANIA   | 42097 | NORTHUMBERLAND | 20,097.9                     | 72.2       | 7,708.2  | 27.7       | 12.5 | 0.0        | 27,818.6 |
| PENNSYLVANIA   | 42099 | PERRY          | 973.7                        | 21.7       | 3,517.0  | 78.2       | 6.2  | 0.1        | 4,496.9  |
| PENNSYLVANIA   | 42105 | POTTER         | -                            | -          | 666.4    | 99.7       | 2.1  | 0.3        | 668.4    |
| PENNSYLVANIA   | 42107 | SCHUYLKILL     | 8,738.7                      | 59.7       | 5,879.4  | 40.2       | 19.1 | 0.1        | 14,637.3 |
| PENNSYLVANIA   | 42109 | SNYDER         | 1,737.6                      | 29.1       | 4,204.7  | 70.5       | 23.2 | 0.4        | 5,955.5  |
| PENNSYLVANIA   | 42111 | SOMERSET       | -                            | -          | 9.3      | 99.8       | 0.0  | 0.2        | 9.3      |
| PENNSYLVANIA   | 42113 | SULLIVAN       | -                            | -          | 500.9    | 99.6       | 1.8  | 0.4        | 502.7    |
| PENNSYLVANIA   | 42115 | SUSQUEHANNA    | -                            | -          | 4,038.2  | 99.9       | 3.5  | 0.1        | 4,041.7  |
| PENNSYLVANIA   | 42117 | TIOGA          | 2,245.7                      | 47.2       | 2,505.9  | 52.7       | 4.2  | 0.1        | 4,755.8  |
| PENNSYLVANIA   | 42119 | UNION          | 3,170.4                      | 54.2       | 2,663.0  | 45.5       | 17.5 | 0.3        | 5,851.0  |
| PENNSYLVANIA   | 42127 | WAYNE          | -                            | -          | 110.9    | 100.0      | -    | -          | 110.9    |
| PENNSYLVANIA   | 42131 | WYOMING        | -                            | -          | 1,902.7  | 99.8       | 4.2  | 0.2        | 1,906.9  |
| PENNSYLVANIA   | 42133 | YORK           | 66,493.5                     | 83.1       | 13,455.7 | 16.8       | 45.9 | 0.1        | 79,995.0 |
| VIRGINIA   | 51001 | ACCOMACK       | -                            | -          | 947.7    | 99.5       | 4.4  | 0.5        | 952.1    |
| VIRGINIA   | 51003 | ALBEMARLE      | 9,076.6                      | 87.3       | 1,314.7  | 12.6       | 8.9  | 0.1        | 10,400.2 |
| VIRGINIA   | 51005 | ALLEGHANY      | -                            | -          | 1,888.9  | 100.0      | -    | -          | 1,888.9  |
| VIRGINIA   | 51007 | AMELIA         | -                            | -          | 275.5    | 99.2       | 2.2  | 0.8        | 277.6    |
| VIRGINIA   | 51009 | AMHERST        | 1,048.9                      | 58.4       | 745.7    | 41.5       | 2.6  | 0.1        | 1,797.2  |
| VIRGINIA   | 51011 | APPOMATTOX     | -                            | -          | 207.5    | 99.3       | 1.4  | 0.7        | 208.9    |
| VIRGINIA   | 51013 | ARLINGTON      | 78,176.0                     | 100.0      | -        | -          | -    | -          | 78,176.0 |
| VIRGINIA   | 51015 | AUGUSTA        | 3,009.3                      | 58.4       | 2,133.4  | 41.4       | 13.3 | 0.3        | 5,156.0  |
| VIRGINIA   | 51017 | BATH           | -                            | -          | 656.6    | 99.7       | 2.1  | 0.3        | 658.6    |

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |              | 1. Housing Units             |            |         |            |      |            | SUBTOTAL  |
|--|-------|--------------|------------------------------|------------|---------|------------|------|------------|-----------|
|  |       |              | a. HOUSING UNITS USING SEWER |            |         |            |      |            |           |
|  |       |              | AS:                          |            |         |            |      |            |           |
| STATE  | FIPS  | COUNTY       | URBAN                        | % Subtotal | RURAL   | % Subtotal | FARM | % Subtotal |           |
| VIRGINIA   | 51019 | BEDFORD      | 490.0                        | 83.4       | 97.0    | 16.5       | 0.4  | 0.1        | 587.5     |
| VIRGINIA   | 51023 | BOTETOURT    | 0.2                          | 0.0        | 798.3   | 100.0      | -    | -          | 798.6     |
| VIRGINIA   | 51029 | BUCKINGHAM   | -                            | -          | 328.4   | 99.3       | 2.3  | 0.7        | 330.6     |
| VIRGINIA   | 51031 | CAMPBELL     | 510.8                        | 77.6       | 147.0   | 22.3       | 0.3  | 0.0        | 658.2     |
| VIRGINIA   | 51033 | CAROLINE     | -                            | -          | 770.7   | 100.0      | -    | -          | 770.7     |
| VIRGINIA   | 51036 | CHARLES CITY | -                            | -          | 17.2    | 100.0      | -    | -          | 17.2      |
| VIRGINIA   | 51037 | CHARLOTTE    | -                            | -          | 0.1     | 100.0      | -    | -          | 0.1       |
| VIRGINIA   | 51041 | CHESTERFIELD | 52,669.9                     | 94.6       | 3,033.2 | 5.4        | -    | -          | 55,703.0  |
| VIRGINIA   | 51043 | CLARKE       | 983.8                        | 82.2       | 209.9   | 17.5       | 3.3  | 0.3        | 1,197.0   |
| VIRGINIA   | 51045 | CRAIG        | -                            | -          | 279.6   | 100.0      | -    | -          | 279.6     |
| VIRGINIA   | 51047 | CULPEPER     | 3,049.1                      | 88.0       | 414.9   | 12.0       | 0.8  | 0.0        | 3,464.8   |
| VIRGINIA   | 51049 | CUMBERLAND   | 137.4                        | 77.8       | 38.7    | 21.9       | 0.6  | 0.3        | 176.7     |
| VIRGINIA   | 51053 | DINWIDDIE    | 1,268.5                      | 89.2       | 152.8   | 10.7       | 0.8  | 0.1        | 1,422.2   |
| VIRGINIA   | 51057 | ESSEX        | -                            | -          | 690.1   | 99.2       | 5.4  | 0.8        | 695.5     |
| VIRGINIA   | 51059 | FAIRFAX      | 271,588.4                    | 99.5       | 1,376.8 | 0.5        | -    | -          | 272,965.2 |
| VIRGINIA   | 51061 | FAUQUIER     | 1,798.9                      | 40.8       | 2,596.7 | 58.9       | 9.9  | 0.2        | 4,405.4   |
| VIRGINIA   | 51065 | FLUVANNA     | -                            | -          | 984.3   | 99.4       | 6.3  | 0.6        | 990.6     |
| VIRGINIA   | 51069 | FREDERICK    | -                            | -          | 6,685.5 | 99.5       | 30.2 | 0.5        | 6,715.8   |
| VIRGINIA   | 51071 | GILES        | -                            | -          | 3.1     | 100.0      | -    | -          | 3.1       |
| VIRGINIA   | 51073 | GLOUCESTER   | 413.6                        | 41.3       | 584.5   | 58.4       | 2.5  | 0.3        | 1,000.7   |
| VIRGINIA   | 51075 | GOOCHLAND    | -                            | -          | 233.4   | 100.0      | -    | -          | 233.4     |
| VIRGINIA   | 51079 | GREENE       | -                            | -          | 495.7   | 99.1       | 4.4  | 0.9        | 500.1     |
| VIRGINIA   | 51085 | HANOVER      | 6,896.1                      | 81.9       | 1,522.4 | 18.1       | -    | -          | 8,418.6   |
| VIRGINIA   | 51087 | HENRICO      | 79,772.8                     | 99.6       | 348.6   | 0.4        | 6.5  | 0.0        | 80,127.8  |
| VIRGINIA   | 51091 | HIGHLAND     | -                            | -          | 149.1   | 99.0       | 1.6  | 1.0        | 150.7     |

Table 5

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                | 1. Housing Units             |            |         |            |      |            |          |
|--|-------|----------------|------------------------------|------------|---------|------------|------|------------|----------|
|  |       |                | a. HOUSING UNITS USING SEWER |            |         |            |      |            |          |
|  |       |                | AS:                          |            |         |            |      |            |          |
| STATE  | FIPS  | COUNTY         | URBAN                        | % Subtotal | RURAL   | % Subtotal | FARM | % Subtotal | SUBTOTAL |
| VIRGINIA   | 51093 | ISLE OF WIGHT  | 1,474.9                      | 80.6       | 355.6   | 19.4       | -    | -          | 1,830.5  |
| VIRGINIA   | 51095 | JAMES CITY     | 5,785.5                      | 63.4       | 3,323.4 | 36.4       | 18.8 | 0.2        | 9,127.8  |
| VIRGINIA   | 51097 | KING AND QUEEN | -                            | -          | 11.2    | 98.0       | 0.2  | 2.0        | 11.4     |
| VIRGINIA   | 51099 | KING GEORGE    | -                            | -          | 1,231.7 | 100.0      | -    | -          | 1,231.7  |
| VIRGINIA   | 51101 | KING WILLIAM   | 1,019.5                      | 94.4       | 60.1    | 5.6        | 0.1  | 0.0        | 1,079.7  |
| VIRGINIA   | 51103 | LANCASTER      | -                            | -          | 559.0   | 99.1       | 5.3  | 0.9        | 564.4    |
| VIRGINIA   | 51107 | LOUDOUN        | 20,477.0                     | 90.6       | 2,104.2 | 9.3        | 8.8  | 0.0        | 22,590.0 |
| VIRGINIA   | 51109 | LOUISA         | -                            | -          | 561.1   | 98.7       | 7.6  | 1.3        | 568.7    |
| VIRGINIA   | 51111 | LUNENBERG      | -                            | -          | 0.0     | 100.0      | -    | -          | 0.0      |
| VIRGINIA   | 51113 | MADISON        | -                            | -          | 152.3   | 99.9       | 0.2  | 0.1        | 152.5    |
| VIRGINIA   | 51115 | MATHEWS        | -                            | -          | 188.7   | 99.5       | 1.0  | 0.5        | 189.7    |
| VIRGINIA   | 51119 | MIDDLESEX      | -                            | -          | 352.4   | 99.9       | 0.4  | 0.1        | 352.7    |
| VIRGINIA   | 51121 | MONTGOMERY     | -                            | -          | 19.7    | 100.0      | -    | -          | 19.7     |
| VIRGINIA   | 51125 | NELSON         | -                            | -          | 414.4   | 99.7       | 1.2  | 0.3        | 415.6    |
| VIRGINIA   | 51127 | NEW KENT       | -                            | -          | 38.0    | 100.0      | -    | -          | 38.0     |
| VIRGINIA   | 51131 | NORTHAMPTON    | -                            | -          | 740.5   | 99.1       | 7.0  | 0.9        | 747.5    |
| VIRGINIA   | 51133 | NORTHUMBERLAND | -                            | -          | 311.1   | 99.0       | 3.2  | 1.0        | 314.4    |
| VIRGINIA   | 51135 | NOTTOWAY       | 358.7                        | 29.3       | 860.5   | 70.4       | 3.7  | 0.3        | 1,222.8  |
| VIRGINIA   | 51137 | ORANGE         | 965.4                        | 32.1       | 2,035.8 | 67.7       | 6.6  | 0.2        | 3,007.8  |
| VIRGINIA   | 51139 | PAGE           | 1,714.3                      | 53.9       | 1,454.5 | 45.7       | 13.3 | 0.4        | 3,182.1  |
| VIRGINIA   | 51145 | POWHATAN       | -                            | -          | 61.0    | 100.0      | -    | -          | 61.0     |
| VIRGINIA   | 51147 | PRINCE EDWARD  | 1,335.3                      | 86.7       | 204.0   | 13.2       | 1.3  | 0.1        | 1,540.6  |
| VIRGINIA   | 51149 | PRINCE GEORGE  | 1,712.2                      | 68.1       | 799.9   | 31.8       | 2.5  | 0.1        | 2,514.7  |
| VIRGINIA   | 51153 | PRINCE WILLIAM | 55,378.7                     | 95.2       | 2,781.8 | 4.8        | 3.6  | 0.0        | 58,164.1 |
| VIRGINIA   | 51157 | RAPPAHANNOCK   | -                            | -          | 147.5   | 99.7       | 0.4  | 0.3        | 148.0    |

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                  | 1. Housing Units             |            |         |            |      |            | SUBTOTAL |
|--|-------|------------------|------------------------------|------------|---------|------------|------|------------|----------|
|  |       |                  | a. HOUSING UNITS USING SEWER |            |         |            |      |            |          |
| AS:  |       |                  | URBAN                        |            | RURAL   |            | FARM |            |          |
| STATE  | FIPS  | COUNTY           | URBAN                        | % Subtotal | RURAL   | % Subtotal | FARM | % Subtotal |          |
| VIRGINIA   | 51159 | RICHMOND         | -                            | -          | 352.9   | 96.9       | 11.3 | 3.1        | 364.2    |
| VIRGINIA   | 51161 | ROANOKE          | -                            | -          | 4.3     | 100.0      | -    | -          | 4.3      |
| VIRGINIA   | 51163 | ROCKBRIDGE       | -                            | -          | 1,237.6 | 99.8       | 2.7  | 0.2        | 1,240.3  |
| VIRGINIA   | 51165 | ROCKINGHAM       | 1,196.1                      | 20.8       | 4,537.2 | 78.8       | 26.5 | 0.5        | 5,759.8  |
| VIRGINIA   | 51171 | SHENANDOAH       | 2,666.6                      | 51.6       | 2,478.5 | 48.0       | 18.7 | 0.4        | 5,163.8  |
| VIRGINIA   | 51177 | SPOTSYLVANIA     | 8,481.3                      | 81.4       | 1,936.6 | 18.6       | -    | -          | 10,417.9 |
| VIRGINIA   | 51179 | STAFFORD         | 5,714.5                      | 51.8       | 5,327.7 | 48.2       | -    | -          | 11,042.2 |
| VIRGINIA   | 51181 | SUTRY            | -                            | -          | 171.5   | 99.0       | 1.6  | 1.0        | 173.1    |
| VIRGINIA   | 51187 | WARREN           | 4,388.7                      | 96.5       | 157.9   | 3.5        | 0.2  | 0.0        | 4,546.8  |
| VIRGINIA   | 51193 | WESTMORELAND     | 1,213.9                      | 86.0       | 196.6   | 13.9       | 1.6  | 0.1        | 1,412.2  |
| VIRGINIA   | 51199 | YORK             | 7,550.1                      | 87.8       | 1,040.5 | 12.1       | 6.5  | 0.1        | 8,597.1  |
| VIRGINIA   | 51510 | ALEXANDRIA       | 53,131.6                     | 100.0      | -       | -          | -    | -          | 53,131.6 |
| VIRGINIA   | 51530 | BUENA VISTA      | 1,959.2                      | 100.0      | -       | -          | -    | -          | 1,959.2  |
| VIRGINIA   | 51540 | CHARLOTTESVILLE  | 15,219.4                     | 100.0      | -       | -          | -    | -          | 15,219.4 |
| VIRGINIA   | 51550 | CHESAPEAKE CITY  | 41,506.2                     | 100.0      | 0.2     | 0.0        | -    | -          | 41,506.3 |
| VIRGINIA   | 51560 | CLIFTON FORGE    | 1,607.3                      | 100.0      | -       | -          | -    | -          | 1,607.3  |
| VIRGINIA   | 51570 | COLONIAL HEIGHTS | 6,340.5                      | 100.0      | -       | -          | -    | -          | 6,340.5  |
| VIRGINIA   | 51580 | COVINGTON        | 2,534.7                      | 100.0      | -       | -          | -    | -          | 2,534.7  |
| VIRGINIA   | 51600 | FAIRFAX          | 6,843.1                      | 100.0      | -       | -          | -    | -          | 6,843.1  |
| VIRGINIA   | 51610 | FALLS CHURCH     | 4,161.7                      | 100.0      | -       | -          | -    | -          | 4,161.7  |
| VIRGINIA   | 51630 | FREDERICKSBURG   | 7,364.8                      | 100.0      | -       | -          | -    | -          | 7,364.8  |
| VIRGINIA   | 51650 | HAMPTON CITY     | 48,415.8                     | 100.0      | -       | -          | -    | -          | 48,415.8 |
| VIRGINIA   | 51660 | HARRISONBURG     | 9,497.1                      | 100.0      | -       | -          | -    | -          | 9,497.1  |
| VIRGINIA   | 51670 | HOPEWELL         | 8,796.2                      | 100.0      | -       | -          | -    | -          | 8,796.2  |
| VIRGINIA   | 51678 | LEXINGTON        | 1,730.5                      | 100.0      | -       | -          | -    | -          | 1,730.5  |

Table 5

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

1. Housing Units

|               |       |                    | a. HOUSING UNITS USING SEWER |            |         |            |      |            | SUBTOTAL |
|---------------|-------|--------------------|------------------------------|------------|---------|------------|------|------------|----------|
| AS:           |       |                    | URBAN                        |            | RURAL   |            | FARM |            |          |
| STATE         | FIPS  | COUNTY             | URBAN                        | % Subtotal | RURAL   | % Subtotal | FARM | % Subtotal |          |
| VIRGINIA      | 51680 | LYNCHBURG          | 21,101.7                     | 100.0      | -       | -          | -    | -          | 21,101.7 |
| VIRGINIA      | 51683 | MANASSES CITY      | 9,157.2                      | 100.0      | -       | -          | -    | -          | 9,157.2  |
| VIRGINIA      | 51685 | MANASSES PARK CIT  | 2,182.0                      | 100.0      | -       | -          | -    | -          | 2,182.0  |
| VIRGINIA      | 51700 | NEWPORT NEWS CIT   | 62,153.0                     | 100.0      | -       | -          | -    | -          | 62,153.0 |
| VIRGINIA      | 51710 | NORFOLK CITY       | 88,572.1                     | 100.0      | -       | -          | -    | -          | 88,572.1 |
| VIRGINIA      | 51730 | PETERSEBURG        | 12,405.0                     | 100.0      | -       | -          | -    | -          | 12,405.0 |
| VIRGINIA      | 51735 | POQUOSON           | 2,711.2                      | 100.0      | -       | -          | -    | -          | 2,711.2  |
| VIRGINIA      | 51740 | PORTSMOUTH CITY    | 38,274.0                     | 100.0      | -       | -          | -    | -          | 38,274.0 |
| VIRGINIA      | 51760 | RICHMOND CITY      | 83,518.0                     | 100.0      | -       | -          | -    | -          | 83,518.0 |
| VIRGINIA      | 51790 | STAUNTON           | 8,740.7                      | 100.0      | 4.0     | 0.0        | 0.1  | 0.0        | 8,744.8  |
| VIRGINIA      | 51800 | SUFFOLK CITY       | 7,833.3                      | 99.1       | 69.5    | 0.9        | -    | -          | 7,902.7  |
| VIRGINIA      | 51810 | VIRGINIA BEACH CIT | 89,583.6                     | 100.0      | -       | -          | -    | -          | 89,583.6 |
| VIRGINIA      | 51820 | WAYNESBORO         | 6,478.2                      | 100.0      | -       | -          | -    | -          | 6,478.2  |
| VIRGINIA      | 51830 | WILLIAMSBURG       | 3,334.9                      | 100.0      | -       | -          | -    | -          | 3,334.9  |
| VIRGINIA      | 51840 | WINCHESTER         | 8,311.2                      | 100.0      | -       | -          | -    | -          | 8,311.2  |
| WEST VIRGINIA | 54003 | BERKELEY           | 6,075.3                      | 59.0       | 4,220.7 | 41.0       | 3.0  | 0.0        | 10,299.0 |
| WEST VIRGINIA | 54023 | GRANT              | -                            | -          | 1,266.4 | 99.7       | 4.0  | 0.3        | 1,270.4  |
| WEST VIRGINIA | 54025 | GREENBRIAR         | 0.5                          | 65.6       | 0.3     | 34.4       | -    | -          | 0.8      |
| WEST VIRGINIA | 54027 | HAMPSHIRE          | -                            | -          | 1,091.7 | 99.5       | 6.0  | 0.5        | 1,097.7  |
| WEST VIRGINIA | 54031 | HARDY              | -                            | -          | 1,247.7 | 99.6       | 5.1  | 0.4        | 1,252.8  |
| WEST VIRGINIA | 54037 | JEFFERSON          | 2,295.1                      | 42.4       | 1,119.8 | 57.6       | 3.7  | 0.1        | 5,418.7  |
| WEST VIRGINIA | 54057 | MINERAL            | 2,940.7                      | 55.7       | 2,340.5 | 44.3       | 2.5  | 0.0        | 5,283.6  |
| WEST VIRGINIA | 54063 | MONROE             | -                            | -          | 17.3    | 97.3       | 0.5  | 2.7        | 17.8     |
| WEST VIRGINIA | 54065 | MORGAN             | -                            | -          | 1,241.0 | 99.8       | 2.6  | 0.2        | 1,243.6  |
| WEST VIRGINIA | 54071 | PENDLETON          | -                            | -          | 474.3   | 99.0       | 4.9  | 1.0        | 479.3    |

HOUSING UNITS AS URBAN, RURAL AND FARM  
 TYPES AND MEANS OF WASTE DISPOSAL:  
 COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |            | 1. Housing Units             |            |           |            |         | SUBTOTAL   |             |
|--|-------|------------|------------------------------|------------|-----------|------------|---------|------------|-------------|
|  |       |            | a. HOUSING UNITS USING SEWER |            |           |            |         |            |             |
| AS:  |       |            |                              |            |           |            |         |            |             |
| STATE  | FIPS  | COUNTY     | URBAN                        | % Subtotal | RURAL     | % Subtotal | FARM    | % Subtotal |             |
| WEST VIRGINIA  | 54075 | POCAHONTAS | -                            | -          | 0.2       | 98.4       | 0.0     | 1.6        | 0.2         |
| WEST VIRGINIA  | 54077 | PRESTON    | -                            | -          | 0.2       | 99.1       | 0.0     | 0.9        | 0.2         |
| WEST VIRGINIA  | 54083 | RANDOLPH   | -                            | -          | 0.0       | 100.0      | -       | -          | 0.0         |
| WEST VIRGINIA  | 54093 | TUCKER     | -                            | -          | 10.9      | 100.0      | -       | -          | 10.9        |
| Grand Total  |       |            | 3,637,549.9                  | 91.7       | 327,222.5 | 8.3        | 1,164.6 | 0.0        | 3,965,937.0 |

Table 5

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

|                      |       |                 | b. HOUSING UNITS USING SEPTIC |            |          |            |       |           | SUBTOTAL |
|----------------------|-------|-----------------|-------------------------------|------------|----------|------------|-------|-----------|----------|
| AS:                  |       |                 | URBAN                         |            | RURAL    |            | FARM  |           |          |
| STATE                | FIPS  | COUNTY          | URBAN                         | % Subtotal | RURAL    | % Subtotal | FARM  | %Subtotal |          |
| DELAWARE             | 10001 | KENT            | 3.9                           | 0.1        | 4,646.9  | 93.7       | 307.4 | 6.2       | 4,958.3  |
| DELAWARE             | 10003 | NEW CASTLE      | 134.9                         | 10.6       | 1,095.4  | 85.7       | 47.8  | 3.7       | 1,278.2  |
| DELAWARE             | 10005 | SUSSEX          | 415.7                         | 3.5        | 10,705.1 | 91.3       | 608.7 | 5.2       | 11,729.5 |
| DISTRICT OF COLUMBIA | 11001 | WASHINGTON      | 503.1                         | 100.0      | -        | -          | -     | -         | 503.1    |
| MARYLAND             | 24001 | ALLEGANY        | 847.0                         | 18.7       | 3,639.5  | 80.2       | 49.0  | 1.1       | 4,535.6  |
| MARYLAND             | 24003 | ANNE ARUNDEL    | 24,152.8                      | 66.1       | 11,936.4 | 32.7       | 448.5 | 1.2       | 36,537.6 |
| MARYLAND             | 24005 | BALTIMORE       | 11,302.6                      | 37.4       | 18,299.0 | 60.5       | 628.0 | 2.1       | 30,229.5 |
| MARYLAND             | 24009 | CALVERT         | 1,925.1                       | 13.5       | 12,016.3 | 84.0       | 361.5 | 2.5       | 14,303.1 |
| MARYLAND             | 24011 | CAROLINE        | 84.9                          | 1.3        | 5,605.7  | 88.0       | 677.5 | 10.6      | 6,368.2  |
| MARYLAND             | 24013 | CARROLL         | 1,623.6                       | 6.4        | 22,755.0 | 89.8       | 965.3 | 3.8       | 25,344.3 |
| MARYLAND             | 24015 | CECIL           | 359.0                         | 2.6        | 13,014.4 | 93.5       | 541.9 | 3.9       | 13,915.3 |
| MARYLAND             | 24017 | CHARLES         | 2,144.1                       | 17.0       | 10,113.7 | 80.2       | 359.3 | 2.8       | 12,617.2 |
| MARYLAND             | 24019 | DORCHESTER      | 25.0                          | 0.5        | 4,830.4  | 93.5       | 312.9 | 6.1       | 5,168.2  |
| MARYLAND             | 24021 | FREDERICK       | 5,974.0                       | 26.4       | 15,692.1 | 69.3       | 985.0 | 4.3       | 22,651.0 |
| MARYLAND             | 24023 | GARRETT         | -                             | -          | 1,307.4  | 94.2       | 80.5  | 5.8       | 1,387.9  |
| MARYLAND             | 24025 | HARFORD         | 6,939.4                       | 29.2       | 16,441.6 | 69.1       | 415.0 | 1.7       | 23,796.1 |
| MARYLAND             | 24027 | HOWARD          | 2,448.6                       | 21.7       | 8,540.4  | 75.9       | 269.3 | 2.4       | 11,258.3 |
| MARYLAND             | 24029 | KENT            | 113.1                         | 3.4        | 2,808.1  | 84.8       | 391.1 | 11.8      | 3,312.2  |
| MARYLAND             | 24031 | MONTGOMERY      | 7,023.4                       | 43.1       | 8,900.5  | 54.6       | 376.5 | 2.3       | 16,300.4 |
| MARYLAND             | 24033 | PRINCE GEORGE'S | 5,425.9                       | 60.1       | 3,415.5  | 37.8       | 188.0 | 2.1       | 9,029.4  |
| MARYLAND             | 24035 | QUEEN ANNE'S    | -                             | -          | 8,048.6  | 95.0       | 424.3 | 5.0       | 8,473.4  |
| MARYLAND             | 24037 | SAINT MARY'S    | 2,618.2                       | 15.5       | 13,734.1 | 81.5       | 493.1 | 2.9       | 16,845.3 |
| MARYLAND             | 24039 | SOMERSET        | 16.4                          | 0.4        | 4,233.3  | 93.3       | 286.6 | 6.3       | 4,536.3  |
| MARYLAND             | 24041 | TALBOT          | 187.9                         | 3.0        | 5,655.1  | 89.4       | 481.1 | 7.6       | 6,325.1  |
| MARYLAND             | 24043 | WASHINGTON      | 3,602.2                       | 21.6       | 12,565.7 | 75.3       | 518.3 | 3.1       | 16,687.2 |

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

|              |       |                | b. HOUSING UNITS USING SEPTIC |            |          |            |       |           |          | SUBTOTAL |
|--------------|-------|----------------|-------------------------------|------------|----------|------------|-------|-----------|----------|----------|
|              |       |                | AS:                           |            |          |            |       |           |          |          |
| STATE        | FIPS  | COUNTY         | URBAN                         | % Subtotal | RURAL    | % Subtotal | FARM  | %Subtotal |          |          |
| MARYLAND     | 24045 | WICOMICO       | 163.6                         | 1.2        | 13,374.0 | 94.7       | 590.0 | 4.2       | 14,127.6 |          |
| MARYLAND     | 24047 | WORCESTER      | 22.3                          | 0.9        | 2,379.8  | 91.0       | 213.6 | 8.2       | 2,615.7  |          |
| MARYLAND     | 24510 | BALTIMORE CITY | 1,334.4                       | 100.0      | -        | -          | -     | -         | 1,334.4  |          |
| NEW YORK     | 36003 | ALLEGANY       | 11.4                          | 1.2        | 913.3    | 95.6       | 30.4  | 3.2       | 955.2    |          |
| NEW YORK     | 36007 | BROOME         | 4,893.2                       | 21.8       | 17,269.3 | 77.1       | 233.1 | 1.0       | 22,395.7 |          |
| NEW YORK     | 36011 | CAYUGA         | -                             | -          | 14.0     | 91.7       | 1.3   | 8.3       | 15.3     |          |
| NEW YORK     | 36015 | CHEMUNG        | 4,564.5                       | 38.8       | 7,051.0  | 60.0       | 140.4 | 1.2       | 11,755.8 |          |
| NEW YORK     | 36017 | CHENANGO       | 38.6                          | 0.3        | 12,133.0 | 94.9       | 608.6 | 4.8       | 12,780.1 |          |
| NEW YORK     | 36023 | CORTLAND       | 417.8                         | 6.3        | 5,928.4  | 88.9       | 320.5 | 4.8       | 6,666.7  |          |
| NEW YORK     | 36025 | DELAWARE       | 29.5                          | 0.9        | 3,142.6  | 93.4       | 191.6 | 5.7       | 3,363.7  |          |
| NEW YORK     | 36043 | HERKIMER       | -                             | -          | 1,355.0  | 93.1       | 101.0 | 6.9       | 1,456.0  |          |
| NEW YORK     | 36051 | LIVINGSTON     | -                             | -          | 127.8    | 97.8       | 2.9   | 2.2       | 130.7    |          |
| NEW YORK     | 36053 | MADISON        | 236.5                         | 5.3        | 3,956.5  | 88.6       | 271.0 | 6.1       | 4,464.1  |          |
| NEW YORK     | 36065 | ONEIDA EAST    | 5.9                           | 0.8        | 737.0    | 93.6       | 44.5  | 5.7       | 787.5    |          |
| NEW YORK     | 36067 | ONONDAGA       | -                             | -          | 707.8    | 95.5       | 33.6  | 4.5       | 741.4    |          |
| NEW YORK     | 36069 | ONTARIO        | -                             | -          | 41.1     | 96.2       | 1.6   | 3.8       | 42.7     |          |
| NEW YORK     | 36077 | OTSEGO         | 67.7                          | 0.5        | 13,572.8 | 95.0       | 639.8 | 4.5       | 14,280.3 |          |
| NEW YORK     | 36095 | SCHOMARIE      | -                             | -          | 371.3    | 97.0       | 11.3  | 3.0       | 382.7    |          |
| NEW YORK     | 36097 | SCHUYLER       | -                             | -          | 1,328.1  | 96.7       | 45.6  | 3.3       | 1,373.6  |          |
| NEW YORK     | 36101 | STEBEN         | 199.1                         | 1.2        | 15,154.0 | 94.0       | 768.6 | 4.8       | 16,121.7 |          |
| NEW YORK     | 36107 | TIOGA          | 560.5                         | 4.8        | 10,879.3 | 92.2       | 355.7 | 3.0       | 11,795.5 |          |
| NEW YORK     | 36109 | TOMPKINS       | -                             | -          | 1,824.4  | 97.2       | 51.8  | 2.8       | 1,876.1  |          |
| NEW YORK     | 36123 | YATES          | -                             | -          | 81.4     | 94.1       | 5.1   | 5.9       | 86.5     |          |
| PENNSYLVANIA | 42001 | ADAMS          | 19.3                          | 0.1        | 13,048.8 | 93.5       | 889.8 | 6.4       | 13,957.9 |          |
| PENNSYLVANIA | 42009 | BELFORD        | -                             | -          | 12,374.4 | 95.5       | 584.3 | 4.5       | 12,958.7 |          |

Table 5

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

| b. HOUSING UNITS USING SEPTIC |       |            |         |            |          |            |         |           | SUBTOTAL |
|-------------------------------|-------|------------|---------|------------|----------|------------|---------|-----------|----------|
| AS:                           |       |            |         |            |          |            |         |           |          |
| STATE                         | FIPS  | COUNTY     | URBAN   | % Subtotal | RURAL    | % Subtotal | FARM    | %Subtotal |          |
| PENNSYLVANIA                  | 42011 | BERKS      | 0.5     | 0.0        | 3,502.7  | 94.2       | 215.8   | 5.8       | 3,718.5  |
| PENNSYLVANIA                  | 42013 | BLAIR      | 2,186.0 | 16.7       | 10,526.5 | 80.5       | 365.1   | 2.8       | 13,077.5 |
| PENNSYLVANIA                  | 42015 | BRADFORD   | 418.5   | 2.9        | 12,932.0 | 91.1       | 846.5   | 6.0       | 14,197.0 |
| PENNSYLVANIA                  | 42021 | CAMBRIA    | -       | -          | 4,670.3  | 97.3       | 131.4   | 2.7       | 4,801.7  |
| PENNSYLVANIA                  | 42023 | CAMERON    | 5.3     | 0.6        | 927.3    | 99.1       | 3.0     | 0.3       | 935.6    |
| PENNSYLVANIA                  | 42025 | CARBON     | -       | -          | 0.4      | 98.7       | 0.0     | 1.3       | 0.5      |
| PENNSYLVANIA                  | 42027 | CENTRE     | 288.1   | 2.3        | 11,754.2 | 92.1       | 715.4   | 5.6       | 12,757.7 |
| PENNSYLVANIA                  | 42029 | CHESTER    | 40.5    | 0.6        | 6,133.8  | 93.9       | 361.1   | 5.5       | 6,535.4  |
| PENNSYLVANIA                  | 42033 | CLEARFIELD | 93.2    | 0.7        | 12,831.9 | 97.9       | 183.3   | 1.4       | 13,108.4 |
| PENNSYLVANIA                  | 42035 | CLINTON    | 6.4     | 0.1        | 4,190.3  | 95.8       | 177.6   | 4.1       | 4,374.3  |
| PENNSYLVANIA                  | 42037 | COLUMBIA   | 279.2   | 2.2        | 12,050.0 | 93.2       | 608.1   | 4.7       | 12,977.3 |
| PENNSYLVANIA                  | 42041 | CUMBERLAND | 1,987.1 | 10.8       | 15,584.0 | 84.6       | 846.6   | 4.6       | 18,417.8 |
| PENNSYLVANIA                  | 42043 | DAUPHIN    | 2,701.8 | 15.3       | 14,483.2 | 81.8       | 519.6   | 2.9       | 17,704.6 |
| PENNSYLVANIA                  | 42047 | ELK        | -       | -          | 1,696.6  | 99.9       | 2.2     | 0.1       | 1,698.7  |
| PENNSYLVANIA                  | 42055 | FRANKLIN   | 251.4   | 1.6        | 14,635.6 | 91.2       | 1,154.2 | 7.2       | 16,041.2 |
| PENNSYLVANIA                  | 42057 | FULTON     | -       | -          | 3,711.3  | 93.3       | 266.0   | 6.7       | 3,977.3  |
| PENNSYLVANIA                  | 42061 | HUNTINGDON | -       | -          | 8,714.7  | 96.0       | 366.9   | 4.0       | 9,081.6  |
| PENNSYLVANIA                  | 42063 | INDIANA    | -       | -          | 985.6    | 97.3       | 27.0    | 2.7       | 1,012.6  |
| PENNSYLVANIA                  | 42065 | JEFFERSON  | -       | -          | 1.0      | 92.1       | 0.1     | 7.9       | 1.1      |
| PENNSYLVANIA                  | 42067 | JUNIATA    | -       | -          | 5,046.3  | 93.2       | 370.1   | 6.8       | 5,416.4  |
| PENNSYLVANIA                  | 42069 | LACKAWANNA | 981.9   | 10.9       | 7,901.0  | 87.3       | 163.0   | 1.8       | 9,046.0  |
| PENNSYLVANIA                  | 42071 | LANCASTER  | 2,835.5 | 6.3        | 38,382.8 | 85.9       | 3,481.6 | 7.8       | 44,699.9 |
| PENNSYLVANIA                  | 42075 | LEBANON    | 1,172.5 | 9.8        | 10,289.6 | 85.6       | 555.5   | 4.6       | 12,017.6 |
| PENNSYLVANIA                  | 42079 | LUZERNE    | 4,108.6 | 18.9       | 17,411.2 | 80.0       | 252.3   | 1.2       | 21,772.1 |
| PENNSYLVANIA                  | 42081 | LYCOMING   | 2,972.8 | 15.6       | 15,446.8 | 81.2       | 603.0   | 3.2       | 19,022.5 |

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

|              |       |                | b. HOUSING UNITS USING SEPTIC |            |          |            |         |           | SUBTOTAL |
|--------------|-------|----------------|-------------------------------|------------|----------|------------|---------|-----------|----------|
| AS:          |       |                |                               |            |          |            |         |           |          |
| STATE        | FIPS  | COUNTY         | URBAN                         | % Subtotal | RURAL    | % Subtotal | FARM    | %Subtotal |          |
| PENNSYLVANIA | 42083 | MCKEAN         | -                             | -          | 71.7     | 99.1       | 0.6     | 0.9       | 72.4     |
| PENNSYLVANIA | 42087 | MIFFLIN        | 29.6                          | 0.4        | 6,603.7  | 94.4       | 358.5   | 5.1       | 6,991.8  |
| PENNSYLVANIA | 42093 | MONTOUR        | 70.6                          | 2.4        | 2,656.0  | 90.7       | 203.3   | 6.9       | 2,929.9  |
| PENNSYLVANIA | 42097 | NORTHUMBERLAND | 151.6                         | 1.4        | 9,876.9  | 93.8       | 496.8   | 4.7       | 10,525.3 |
| PENNSYLVANIA | 42105 | PERRY          | 43.3                          | 0.4        | 9,236.8  | 93.9       | 551.9   | 5.6       | 9,831.9  |
| PENNSYLVANIA | 42107 | POTTER         | -                             | -          | 1,191.2  | 94.3       | 71.4    | 5.7       | 1,262.6  |
| PENNSYLVANIA | 42109 | SCHUYLKILL     | 68.1                          | 0.7        | 9,551.7  | 96.2       | 305.3   | 3.1       | 9,925.0  |
| PENNSYLVANIA | 42111 | SNYDER         | 24.4                          | 0.4        | 5,881.2  | 92.9       | 428.3   | 6.8       | 6,333.9  |
| PENNSYLVANIA | 42113 | SOMERSET       | -                             | -          | 770.5    | 90.4       | 82.0    | 9.6       | 852.5    |
| PENNSYLVANIA | 42113 | SULLIVAN       | -                             | -          | 1,644.8  | 97.0       | 51.2    | 3.0       | 1,696.0  |
| PENNSYLVANIA | 42115 | SUSQUEHANNA    | -                             | -          | 10,009.5 | 96.7       | 341.9   | 3.3       | 10,351.4 |
| PENNSYLVANIA | 42117 | TIOGA          | 104.6                         | 1.1        | 8,946.0  | 92.0       | 674.8   | 6.9       | 9,725.3  |
| PENNSYLVANIA | 42119 | UNION          | 22.1                          | 0.4        | 5,319.8  | 93.3       | 357.0   | 6.3       | 5,698.9  |
| PENNSYLVANIA | 42127 | WAYNE          | -                             | -          | 322.6    | 93.1       | 23.8    | 6.9       | 346.5    |
| PENNSYLVANIA | 42131 | WYOMING        | -                             | -          | 7,684.4  | 97.2       | 225.3   | 2.8       | 7,909.7  |
| PENNSYLVANIA | 42133 | YORK           | 5,922.4                       | 12.5       | 39,703.2 | 84.1       | 1,570.7 | 3.3       | 47,196.2 |
| VIRGINIA     | 51001 | ACCOMACK       | -                             | -          | 4,665.4  | 96.6       | 163.8   | 3.4       | 4,829.2  |
| VIRGINIA     | 51003 | ALBEMARLE      | 1,526.6                       | 11.3       | 11,462.8 | 84.6       | 556.1   | 4.1       | 13,545.4 |
| VIRGINIA     | 51005 | ALLEGHANY      | -                             | -          | 2,675.5  | 97.2       | 78.0    | 2.8       | 2,753.5  |
| VIRGINIA     | 51007 | AMELIA         | -                             | -          | 2,395.9  | 91.7       | 217.9   | 8.3       | 2,613.8  |
| VIRGINIA     | 51009 | AMHERST        | 3,079.1                       | 40.5       | 4,339.6  | 57.0       | 193.1   | 2.5       | 7,611.8  |
| VIRGINIA     | 51011 | APPOMATTOX     | -                             | -          | 2,300.2  | 95.2       | 116.8   | 4.8       | 2,417.0  |
| VIRGINIA     | 51013 | ARLINGTON      | 239.0                         | 100.0      | -        | -          | -       | -         | 239.0    |
| VIRGINIA     | 51015 | AUGUSTA        | 1,244.6                       | 9.0        | 11,573.8 | 83.8       | 994.4   | 7.2       | 13,812.8 |
| VIRGINIA     | 51017 | BATH           | -                             | -          | 917.6    | 93.7       | 61.8    | 6.3       | 979.4    |

Table 5

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT |       |              |          |            |          |            |       |           |          |
|---------------------------------------|-------|--------------|----------|------------|----------|------------|-------|-----------|----------|
| COUNTY SUMMARIES                      |       |              |          |            |          |            |       |           |          |
| NCRI-CHESAPEAKE, Inc.                 |       |              |          |            |          |            |       |           |          |
| b. HOUSING UNITS USING SEPTIC         |       |              |          |            |          |            |       |           |          |
| AS:                                   |       |              |          |            |          |            |       |           |          |
| STATE                                 | FIPS  | COUNTY       | URBAN    | % Subtotal | RURAL    | % Subtotal | FARM  | %Subtotal | SUBTOTAL |
| VIRGINIA                              | 51019 | BEDFORD      | 1,220.7  | 45.2       | 1,413.1  | 53.1       | 46.9  | 1.7       | 2,700.7  |
| VIRGINIA                              | 51023 | BOTETOURT    | 14.7     | 0.4        | 3,569.8  | 93.3       | 239.8 | 6.3       | 3,824.3  |
| VIRGINIA                              | 51029 | BUCKINGHAM   | -        | -          | 3,465.9  | 95.3       | 169.7 | 4.7       | 3,635.6  |
| VIRGINIA                              | 51031 | CAMPBELL     | 1,626.7  | 40.8       | 2,338.1  | 58.6       | 26.4  | 0.7       | 3,991.2  |
| VIRGINIA                              | 51033 | CAROLINE     | -        | -          | 5,164.0  | 96.3       | 199.4 | 3.7       | 5,363.4  |
| VIRGINIA                              | 51036 | CHARLES CITY | -        | -          | 1,887.9  | 97.7       | 45.0  | 2.3       | 1,932.9  |
| VIRGINIA                              | 51037 | CHARLOTTE    | -        | -          | 0.4      | 95.9       | 0.0   | 4.1       | 0.4      |
| VIRGINIA                              | 51041 | CHESTERFIELD | 8,759.9  | 50.2       | 8,526.6  | 48.8       | 172.0 | 1.0       | 17,458.5 |
| VIRGINIA                              | 51043 | CLARKE       | 92.9     | 3.2        | 2,480.9  | 86.6       | 291.4 | 10.2      | 2,865.2  |
| VIRGINIA                              | 51045 | CRAIG        | -        | -          | 980.1    | 94.9       | 52.5  | 5.1       | 1,032.6  |
| VIRGINIA                              | 51047 | CULPEPER     | 309.1    | 5.4        | 5,164.9  | 89.5       | 299.6 | 5.2       | 5,773.5  |
| VIRGINIA                              | 51049 | CUMBERLAND   | 35.5     | 1.5        | 2,074.3  | 89.1       | 218.7 | 9.4       | 2,328.6  |
| VIRGINIA                              | 51053 | DINWIDDIE    | 41.6     | 3.5        | 1,063.6  | 90.6       | 68.5  | 5.8       | 1,173.7  |
| VIRGINIA                              | 51057 | ESSEX        | -        | -          | 2,217.3  | 94.5       | 128.8 | 5.5       | 2,346.1  |
| VIRGINIA                              | 51059 | FAIRFAX      | 13,874.6 | 73.9       | 4,856.0  | 25.9       | 36.0  | 0.2       | 18,766.6 |
| VIRGINIA                              | 51061 | FAUQUIER     | 159.0    | 1.4        | 10,783.1 | 91.9       | 788.4 | 6.7       | 11,730.6 |
| VIRGINIA                              | 51065 | FLUVANNA     | -        | -          | 3,128.7  | 95.4       | 152.0 | 4.6       | 3,280.8  |
| VIRGINIA                              | 51069 | FREDERICK    | -        | -          | 8,798.1  | 96.3       | 341.0 | 3.7       | 9,139.1  |
| VIRGINIA                              | 51071 | GILES        | -        | -          | 88.2     | 83.5       | 17.4  | 16.5      | 105.7    |
| VIRGINIA                              | 51073 | GLOUCESTER   | 2,909.1  | 30.7       | 6,411.7  | 67.6       | 163.0 | 1.7       | 9,483.8  |
| VIRGINIA                              | 51075 | GOOCHLAND    | -        | -          | 4,102.7  | 94.6       | 235.0 | 5.4       | 4,337.7  |
| VIRGINIA                              | 51079 | GREENE       | -        | -          | 2,938.9  | 96.1       | 120.4 | 3.9       | 3,059.3  |
| VIRGINIA                              | 51085 | HANOVER      | 3,656.4  | 27.0       | 9,497.2  | 70.1       | 404.0 | 3.0       | 13,557.6 |
| VIRGINIA                              | 51087 | HENRICO      | 3,400.4  | 39.0       | 5,223.2  | 59.9       | 95.5  | 1.1       | 8,719.1  |
| VIRGINIA                              | 51091 | HIGHLAND     | -        | -          | 609.0    | 80.6       | 146.3 | 19.4      | 755.3    |

Table 5

HOUSING UNITS AS URBAN, RURAL AND FARM  
 TYPES AND MEANS OF WASTE DISPOSAL:  
 COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                | b. HOUSING UNITS USING SEPTIC<br>AS: |            |         |            |       |           | SUBTOTAL |
|--|-------|----------------|--------------------------------------|------------|---------|------------|-------|-----------|----------|
| STATE  | FIPS  | COUNTY         | URBAN                                | % Subtotal | RURAL   | % Subtotal | FARM  | %Subtotal |          |
| VIRGINIA   | 51093 | ISLE OF WIGHT  | 229.7                                | 5.3        | 3,962.7 | 91.4       | 145.3 | 3.4       | 4,337.7  |
| VIRGINIA   | 51095 | JAMES CITY     | 371.0                                | 9.9        | 3,304.0 | 88.3       | 65.3  | 1.7       | 3,740.3  |
| VIRGINIA   | 51097 | KING AND QUEEN | -                                    | -          | 2,026.0 | 93.2       | 147.1 | 6.8       | 2,173.1  |
| VIRGINIA   | 51099 | KING GEORGE    | -                                    | -          | 3,223.9 | 96.1       | 131.2 | 3.9       | 3,355.2  |
| VIRGINIA   | 51101 | KING WILLIAM   | 82.1                                 | 3.2        | 2,346.3 | 91.3       | 140.1 | 5.5       | 2,568.5  |
| VIRGINIA   | 51103 | LANCASTER      | -                                    | -          | 3,651.0 | 97.8       | 81.8  | 2.2       | 3,732.8  |
| VIRGINIA   | 51107 | LOUDOUN        | 549.3                                | 7.2        | 6,283.5 | 82.8       | 751.4 | 9.9       | 7,584.2  |
| VIRGINIA   | 51109 | LOUSA          | -                                    | -          | 5,981.7 | 95.6       | 275.6 | 4.4       | 6,257.3  |
| VIRGINIA   | 51111 | LUNENBERG      | -                                    | -          | 0.8     | 95.6       | 0.0   | 4.4       | 0.8      |
| VIRGINIA   | 51113 | MADISON        | -                                    | -          | 3,385.6 | 92.9       | 256.9 | 7.1       | 3,642.5  |
| VIRGINIA   | 51115 | MATHEWS        | -                                    | -          | 3,101.5 | 98.5       | 45.8  | 1.5       | 3,147.3  |
| VIRGINIA   | 51119 | MIDDLESEX      | -                                    | -          | 2,948.2 | 97.3       | 83.1  | 2.7       | 3,031.3  |
| VIRGINIA   | 51121 | MONTGOMERY     | -                                    | -          | 161.1   | 91.8       | 14.4  | 8.2       | 175.5    |
| VIRGINIA   | 51125 | NELSON         | -                                    | -          | 3,481.3 | 95.1       | 178.2 | 4.9       | 3,659.5  |
| VIRGINIA   | 51127 | NEW KENT       | -                                    | -          | 3,502.8 | 97.4       | 93.0  | 2.6       | 3,595.8  |
| VIRGINIA   | 51131 | NORTHAMPTON    | -                                    | -          | 2,223.2 | 95.1       | 114.7 | 4.9       | 2,337.8  |
| VIRGINIA   | 51133 | NORTHUMBERLAND | -                                    | -          | 3,687.9 | 95.2       | 186.2 | 4.8       | 3,874.1  |
| VIRGINIA   | 51135 | NOTTOWAY       | 3.4                                  | 0.2        | 1,370.3 | 90.7       | 137.4 | 9.1       | 1,511.0  |
| VIRGINIA   | 51137 | ORANGE         | 33.1                                 | 0.7        | 4,315.3 | 93.0       | 292.2 | 6.3       | 4,640.5  |
| VIRGINIA   | 51139 | PAGE           | 128.9                                | 2.8        | 4,171.4 | 91.0       | 283.3 | 6.2       | 4,583.5  |
| VIRGINIA   | 51145 | POWHATAN       | -                                    | -          | 4,317.5 | 96.7       | 146.0 | 3.3       | 4,463.5  |
| VIRGINIA   | 51147 | PRINCE EDWARD  | 105.2                                | 3.0        | 3,212.1 | 91.5       | 192.3 | 5.5       | 3,509.7  |
| VIRGINIA   | 51149 | PRINCE GEORGE  | 227.7                                | 13.6       | 1,406.7 | 84.1       | 39.1  | 2.3       | 1,673.6  |
| VIRGINIA   | 51153 | PRINCE WILLIAM | 1,125.5                              | 10.0       | 9,918.0 | 88.2       | 198.4 | 1.8       | 11,242.0 |
| VIRGINIA   | 51157 | RAPPAHANNOCK   | -                                    | -          | 1,989.0 | 93.1       | 147.5 | 6.9       | 2,136.5  |

Table 5

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                  | b. HOUSING UNITS USING SEPTIC<br>AS: |            |          |            |         |            | SUBTOTAL |
|--|-------|------------------|--------------------------------------|------------|----------|------------|---------|------------|----------|
| STATE  | FIPS  | COUNTY           | URBAN                                | % Subtotal | RURAL    | % Subtotal | FARM    | % Subtotal |          |
| VIRGINIA   | 51159 | RICHMOND         | -                                    | -          | 1,880.4  | 92.5       | 152.7   | 7.5        | 2,033.1  |
| VIRGINIA   | 51161 | ROANOKE          | -                                    | -          | 342.3    | 93.2       | 25.0    | 6.8        | 367.3    |
| VIRGINIA   | 51163 | ROCKBRIDGE       | -                                    | -          | 5,007.7  | 93.8       | 332.1   | 6.2        | 5,340.5  |
| VIRGINIA   | 51165 | ROCKINGHAM       | 69.1                                 | 0.5        | 12,715.6 | 90.7       | 1,238.1 | 8.8        | 14,023.6 |
| VIRGINIA   | 51171 | SHENANDOAH       | 208.6                                | 3.2        | 5,865.9  | 89.3       | 491.1   | 7.5        | 6,566.3  |
| VIRGINIA   | 51177 | SPOTSYLVANIA     | 590.7                                | 7.3        | 7,279.3  | 89.4       | 268.2   | 3.3        | 8,138.2  |
| VIRGINIA   | 51179 | STAFFORD         | 768.0                                | 9.5        | 7,190.5  | 89.2       | 106.3   | 1.3        | 8,064.8  |
| VIRGINIA   | 51181 | SURRY            | -                                    | -          | 843.5    | 92.1       | 73.2    | 7.9        | 921.6    |
| VIRGINIA   | 51187 | WARREN           | 256.5                                | 5.0        | 4,755.1  | 93.3       | 85.2    | 1.7        | 5,097.8  |
| VIRGINIA   | 51193 | WESTMORELAND     | 96.0                                 | 2.3        | 3,974.0  | 93.5       | 180.4   | 4.2        | 4,250.3  |
| VIRGINIA   | 51199 | YORK             | 3,080.7                              | 52.8       | 2,741.3  | 47.0       | 9.9     | 0.2        | 5,831.8  |
| VIRGINIA   | 51510 | ALEXANDRIA       | 67.6                                 | 100.0      | -        | -          | -       | -          | 67.6     |
| VIRGINIA   | 51530 | BUENA VISTA      | 74.6                                 | 100.0      | -        | -          | -       | -          | 74.6     |
| VIRGINIA   | 51540 | CHARLOTTESVILLE  | 212.1                                | 100.0      | -        | -          | -       | -          | 212.1    |
| VIRGINIA   | 51550 | CHESAPEAKE CITY  | 3,097.5                              | 99.2       | 23.0     | 0.7        | 2.9     | 0.1        | 3,123.4  |
| VIRGINIA   | 51560 | CLIFTON FORGE    | 3.7                                  | 100.0      | -        | -          | -       | -          | 3.7      |
| VIRGINIA   | 51570 | COLONIAL HEIGHTS | 22.5                                 | 100.0      | -        | -          | -       | -          | 22.5     |
| VIRGINIA   | 51580 | COVINGTON        | 10.3                                 | 100.0      | -        | -          | -       | -          | 10.3     |
| VIRGINIA   | 51600 | FAIRFAX          | 88.1                                 | 100.0      | -        | -          | -       | -          | 88.1     |
| VIRGINIA   | 51610 | FALLS CHURCH     | 7.7                                  | 100.0      | -        | -          | -       | -          | 7.7      |
| VIRGINIA   | 51630 | FREDERICKSBURG   | 76.8                                 | 100.0      | -        | -          | -       | -          | 76.8     |
| VIRGINIA   | 51650 | HAMPTON CITY     | 1,159.4                              | 100.0      | -        | -          | -       | -          | 1,159.4  |
| VIRGINIA   | 51660 | HARRISONBURG     | 448.5                                | 100.0      | -        | -          | -       | -          | 448.5    |
| VIRGINIA   | 51670 | HOPEWELL         | 123.4                                | 100.0      | -        | -          | -       | -          | 123.4    |
| VIRGINIA   | 51678 | LEXINGTON        | 9.5                                  | 100.0      | -        | -          | -       | -          | 9.5      |

Table 5

HOUSING UNITS / URBAN, RURAL AND FARM  
 TYPES AND MEANS OF WASTE DISPOSAL:  
 COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
 COUNTY SUMMARIES  
 NCRI-CHESAPEAKE, Inc.

| b. HOUSING UNITS USING SEPTIC |       |                    |         |            |          |            |       |           | SUBTOTAL |
|-------------------------------|-------|--------------------|---------|------------|----------|------------|-------|-----------|----------|
| AS:                           |       |                    |         |            |          |            |       |           |          |
| STATE                         | FIPS  | COUNTY             | URBAN   | % Subtotal | RURAL    | % Subtotal | FARM  | %Subtotal |          |
| VIRGINIA                      | 51680 | LYNCHBURG          | 4,006.1 | 100.0      | -        | -          | -     | -         | 4,006.1  |
| VIRGINIA                      | 51683 | MANASSES CITY      | 125.8   | 100.0      | -        | -          | -     | -         | 125.8    |
| VIRGINIA                      | 51685 | MANASSES PARK CIT  | -       | -          | -        | -          | -     | -         | -        |
| VIRGINIA                      | 51700 | NEWPORT NEWS CIT   | 1,656.1 | 100.0      | -        | -          | -     | -         | 1,656.1  |
| VIRGINIA                      | 51710 | NORFOLK CITY       | 704.6   | 100.0      | -        | -          | -     | -         | 704.6    |
| VIRGINIA                      | 51730 | PETERSBURG         | 105.2   | 100.0      | -        | -          | -     | -         | 105.2    |
| VIRGINIA                      | 51735 | POQUOSON           | 1,053.2 | 100.0      | -        | -          | -     | -         | 1,053.2  |
| VIRGINIA                      | 51740 | PORTSMOUTH CITY    | 346.5   | 100.0      | -        | -          | -     | -         | 346.5    |
| VIRGINIA                      | 51760 | RICHMOND CITY      | 1,608.2 | 100.0      | -        | -          | -     | -         | 1,608.2  |
| VIRGINIA                      | 51790 | STAUNTON           | 286.6   | 90.4       | 23.4     | 7.4        | 6.9   | 2.2       | 317.0    |
| VIRGINIA                      | 51800 | SUFFOLK CITY       | 4,854.9 | 77.9       | 1,309.3  | 21.0       | 67.6  | 1.1       | 6,231.9  |
| VIRGINIA                      | 51810 | VIRGINIA BEACH CIT | 4,513.9 | 100.0      | -        | -          | -     | -         | 4,513.9  |
| VIRGINIA                      | 51820 | WAYNESBORO         | 450.4   | 100.0      | -        | -          | -     | -         | 450.4    |
| VIRGINIA                      | 51830 | WILLIAMSBURG       | 126.5   | 100.0      | -        | -          | -     | -         | 126.5    |
| VIRGINIA                      | 51840 | WINCHESTER         | 269.8   | 100.0      | -        | -          | -     | -         | 269.8    |
| WEST VIRGINIA                 | 54003 | BERKELEY           | 265.1   | 2.3        | 10,790.8 | 95.2       | 274.1 | 2.4       | 11,330.0 |
| WEST VIRGINIA                 | 54023 | GRANT              | -       | -          | 2,221.3  | 92.5       | 180.4 | 7.5       | 2,401.8  |
| WEST VIRGINIA                 | 54025 | GREENBRIAR         | 0.1     | 8.4        | 0.6      | 89.6       | 0.0   | 2.0       | 0.7      |
| WEST VIRGINIA                 | 54027 | HAMPSHIRE          | -       | -          | 4,167.4  | 94.2       | 257.9 | 5.8       | 4,425.4  |
| WEST VIRGINIA                 | 54031 | HARDY              | -       | -          | 2,297.2  | 91.1       | 223.6 | 8.9       | 2,520.8  |
| WEST VIRGINIA                 | 54037 | JEFFERSON          | 66.4    | 0.9        | 6,958.6  | 95.2       | 287.3 | 3.9       | 7,312.3  |
| WEST VIRGINIA                 | 54057 | MINERAL            | 626.7   | 13.8       | 3,757.2  | 82.8       | 155.7 | 3.4       | 4,539.7  |
| WEST VIRGINIA                 | 54063 | MONROE             | -       | -          | 215.7    | 89.6       | 25.0  | 10.4      | 240.8    |
| WEST VIRGINIA                 | 54065 | MORGAN             | -       | -          | 3,258.5  | 98.2       | 59.4  | 1.8       | 3,318.0  |
| WEST VIRGINIA                 | 54071 | PENLETON           | -       | -          | 1,793.8  | 88.7       | 227.4 | 11.3      | 2,021.2  |

Table 5

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |            | b. HOUSING UNITS USING SEPTIC |            |             |            |          |           | SUBTOTAL    |
|--|-------|------------|-------------------------------|------------|-------------|------------|----------|-----------|-------------|
| AS:  |       |            |                               |            |             |            |          |           |             |
| STATE  | FIPS  | COUNTY     | URBAN                         | % Subtotal | RURAL       | % Subtotal | FARM     | %Subtotal |             |
| WEST VIRGINIA  | 54075 | POCAHONTAS | -                             | -          | 0.7         | 90.4       | 0.1      | 9.6       | 0.8         |
| WEST VIRGINIA  | 54077 | PRESTON    | -                             | -          | 15.1        | 93.6       | 1.0      | 6.4       | 16.1        |
| WEST VIRGINIA  | 54083 | RANDOLPH   | -                             | -          | 0.6         | 92.1       | 0.1      | 7.9       | 0.6         |
| WEST VIRGINIA  | 54093 | TUCKER     | -                             | -          | 1.9         | 98.9       | 0.0      | 1.1       | 1.9         |
| Grand Total  |       |            | 193,784.6                     | 15.3       | 1,021,629.8 | 80.7       | 50,032.2 | 4.0       | 1,265,446.5 |

HOUSING UNITS AS URBAN, RURAL AND FARM  
 TYPES AND MEANS OF WASTE DISPOSAL:  
 COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
 COUNTY SUMMARIES  
 NCRI-CHESAPEAKE, Inc.

| STATE                | FIPS  | COUNTY          | a. HOUSING UNITS USING OTHER MEANS OF NON-SEWERED TREATMENT |           |       |           |      |           | SUBTOTAL | TOTAL     |
|----------------------|-------|-----------------|---|-----------|-------|-----------|------|-----------|----------|-----------|
|                      |       |                 | AS:   |           |       |           |      |           |          |           |
|                      |       |                 | URBAN   | %Subtotal | RURAL | %Subtotal | FARM | %Subtotal |          |           |
| DELAWARE             | 10001 | KENT            | 0.2   | 0.2       | 87.5  | 89.0      | 10.6 | 10.8      | 98.5     | 5,897.7   |
| DELAWARE             | 10003 | NEW CASTLE      | 0.1   | 0.6       | 10.2  | 88.7      | 1.2  | 10.8      | 11.5     | 1,749.6   |
| DELAWARE             | 10005 | SUSSEX          | 27.3  | 6.1       | 368.4 | 82.8      | 49.2 | 11.1      | 444.9    | 17,578.7  |
| DISTRICT OF COLUMBIA | 11001 | WASHINGTON      | 1,198.4   | 100.0     | -     | -         | -    | -         | 1,198.4  | 249,534.6 |
| MARYLAND             | 24001 | ALLEGANY        | 56.2  | 20.1      | 211.9 | 75.9      | 11.0 | 3.9       | 279.1    | 29,532.2  |
| MARYLAND             | 24003 | ANNE ARUNDEL    | 596.6   | 70.0      | 240.1 | 28.2      | 15.3 | 1.8       | 852.0    | 149,114.0 |
| MARYLAND             | 24005 | BALTIMORE       | 457.7   | 59.3      | 313.9 | 40.7      | -    | -         | 771.5    | 268,280.1 |
| MARYLAND             | 24009 | CALVERT         | 17.7  | 3.5       | 445.3 | 87.8      | 44.2 | 8.7       | 507.1    | 16,986.0  |
| MARYLAND             | 24011 | CAROLINE        | 1.6   | 0.6       | 260.5 | 95.0      | 12.0 | 4.4       | 274.1    | 9,983.0   |
| MARYLAND             | 24013 | CARROLL         | 19.0  | 3.3       | 563.4 | 96.7      | -    | -         | 582.4    | 42,248.0  |
| MARYLAND             | 24015 | CECIL           | 39.0  | 8.6       | 410.0 | 90.4      | 4.6  | 1.0       | 453.6    | 23,498.0  |
| MARYLAND             | 24017 | CHARLES         | 55.5  | 5.7       | 833.6 | 85.6      | 84.6 | 8.7       | 973.7    | 32,950.0  |
| MARYLAND             | 24019 | DORCHESTER      | 6.8   | 1.4       | 439.2 | 92.7      | 27.9 | 5.9       | 474.0    | 12,117.0  |
| MARYLAND             | 24021 | FREDERICK       | 151.8   | 21.3      | 559.9 | 78.7      | -    | -         | 711.7    | 52,570.0  |
| MARYLAND             | 24023 | GARRETT         | -   | -         | 72.0  | 83.1      | 14.6 | 16.9      | 86.6     | 1,758.9   |
| MARYLAND             | 24025 | HARFORD         | 80.1  | 15.4      | 439.2 | 84.6      | -    | -         | 519.4    | 63,193.0  |
| MARYLAND             | 24027 | HOWARD          | 47.6  | 21.7      | 171.5 | 78.3      | -    | -         | 219.1    | 68,317.0  |
| MARYLAND             | 24029 | KENT            | 6.0   | 2.4       | 229.9 | 93.2      | 10.7 | 4.4       | 246.6    | 6,702.0   |
| MARYLAND             | 24031 | MONTGOMERY      | 380.5   | 75.4      | 124.2 | 24.6      | -    | -         | 504.7    | 282,227.8 |
| MARYLAND             | 24033 | PRINCE GEORGE'S | 729.3   | 83.6      | 143.2 | 16.4      | -    | -         | 872.6    | 258,010.8 |
| MARYLAND             | 24035 | QUEEN ANNE'S    | -   | -         | 274.0 | 98.2      | 5.0  | 1.8       | 279.0    | 12,489.0  |
| MARYLAND             | 24037 | SAINT MARY'S    | 36.3  | 5.2       | 564.3 | 81.4      | 92.9 | 13.4      | 693.6    | 25,500.0  |
| MARYLAND             | 24039 | SOMERSET        | 0.3   | 0.2       | 187.8 | 92.5      | 14.6 | 7.2       | 202.7    | 7,977.0   |
| MARYLAND             | 24041 | TALBOT          | 14.8  | 9.9       | 131.1 | 87.3      | 3.4  | 2.3       | 149.3    | 12,677.0  |
| MARYLAND             | 24043 | WASHINGTON      | 31.4  | 5.2       | 516.9 | 85.4      | 56.8 | 9.4       | 605.1    | 44,762.0  |
| MARYLAND             | 24045 | WICOMICO        | 16.5  | 4.9       | 295.2 | 88.3      | 22.6 | 6.8       | 334.3    | 27,772.0  |
| MARYLAND             | 24047 | WORCESTER       | 2.2   | 2.1       | 91.8  | 88.2      | 10.1 | 9.7       | 104.1    | 5,261.6   |

Table 5

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

| STATE        | FIPS  | COUNTY         | c. HOUSING UNITS USING OTHER MEANS OF NON-SEWERED TREATMENT |           |       |           |      |           | SUBTOTAL | TOTAL     |
|--------------|-------|----------------|---|-----------|-------|-----------|------|-----------|----------|-----------|
|              |       |                | URBAN   | %Subtotal | RURAL | %Subtotal | FARM | %Subtotal |          |           |
| MARYLAND     | 24510 | BALTIMORE CITY | 2,814.5   | 100.0     | -     | -         | -    | -         | 2,814.5  | 276,483.9 |
| NEW YORK     | 36003 | ALLEGANY       | -   | -         | 14.0  | 94.4      | 0.8  | 5.6       | 14.8     | 1,304.2   |
| NEW YORK     | 36007 | BROOME         | 33.0  | 10.8      | 223.8 | 73.0      | 49.9 | 163       | 306.8    | 80,948.2  |
| NEW YORK     | 36011 | CAYUGA         | -   | -         | 0.0   | 100.0     | -    | -         | 0.0      | 15.6      |
| NEW YORK     | 36015 | CHEMUNG        | 28.2  | 19.4      | 89.8  | 61.7      | 27.5 | 189       | 145.5    | 33,719.6  |
| NEW YORK     | 36017 | CHENANGO       | 2.8   | 0.7       | 382.9 | 94.5      | 19.5 | 4.8       | 405.2    | 19,098.9  |
| NEW YORK     | 36023 | CORTLAND       | 6.9   | 3.3       | 167.2 | 81.2      | 31.9 | 15.5      | 206.0    | 16,442.7  |
| NEW YORK     | 36025 | DELAWARE       | -   | -         | 74.0  | 87.0      | 11.1 | 13.0      | 85.1     | 5,432.4   |
| NEW YORK     | 36043 | HERKIMER       | -   | -         | 11.4  | 92.8      | 0.9  | 7.2       | 12.3     | 1,505.6   |
| NEW YORK     | 36051 | LIVINGSTON     | -   | -         | 2.7   | 96.3      | 0.1  | 3.7       | 2.8      | 133.5     |
| NEW YORK     | 36053 | MADISON        | 12.2  | 7.5       | 142.0 | 87.4      | 8.3  | 5.1       | 162.6    | 5,625.0   |
| NEW YORK     | 36065 | ONEIDA EAST    | 0.8   | 8.8       | 6.9   | 77.0      | 1.3  | 14.2      | 8.9      | 984.5     |
| NEW YORK     | 36067 | ONONDAGA       | -   | -         | 14.5  | 81.7      | 3.2  | 18.3      | 17.8     | 1,045.2   |
| NEW YORK     | 36069 | ONTARIO        | -   | -         | -     | -         | -    | -         | -        | 43.4      |
| NEW YORK     | 36077 | OTSEGO         | 3.0   | 1.2       | 215.2 | 84.4      | 36.9 | 14.5      | 255.1    | 21,477.6  |
| NEW YORK     | 36095 | SCHOHARIE      | -   | -         | 16.6  | 89.6      | 1.9  | 10.4      | 18.5     | 404.1     |
| NEW YORK     | 36097 | SCHUYLER       | -   | -         | 48.4  | 73.2      | 17.7 | 26.8      | 66.1     | 1,454.4   |
| NEW YORK     | 36101 | STEUBEN        | -   | -         | 710.3 | 90.5      | 74.6 | 9.5       | 784.8    | 33,640.0  |
| NEW YORK     | 36107 | TIOGA          | 12.7  | 4.2       | 264.0 | 86.8      | 27.6 | 9.1       | 304.3    | 18,838.0  |
| NEW YORK     | 36109 | TOMPKINS       | -   | -         | 36.1  | 88.3      | 4.8  | 11.7      | 40.9     | 2,122.6   |
| NEW YORK     | 36123 | YATES          | -   | -         | 3.8   | 92.4      | 0.3  | 7.6       | 4.1      | 92.2      |
| PENNSYLVANIA | 42001 | ADAMS          | -   | -         | 578.7 | 95.2      | 29.3 | 4.8       | 608.0    | 28,067.0  |
| PENNSYLVANIA | 42009 | BEDFORD        | -   | -         | 478.0 | 96.0      | 20.0 | 4.0       | 498.0    | 18,029.5  |
| PENNSYLVANIA | 42011 | BERKS          | 0.0   | 0.0       | 65.2  | 86.9      | 9.8  | 13.1      | 75.0     | 4,328.1   |
| PENNSYLVANIA | 42013 | BLAIR          | 91.8  | 19.9      | 356.0 | 77.1      | 13.9 | 3.0       | 461.8    | 50,332.0  |
| PENNSYLVANIA | 42015 | BRADFORD       | 18.3  | 2.3       | 747.6 | 92.2      | 44.9 | 5.5       | 810.7    | 22,492.0  |
| PENNSYLVANIA | 42021 | CAMBRIA        | -   | -         | 481.9 | 98.5      | 7.5  | 1.5       | 489.4    | 11,802.2  |

Table 5

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                | c. HOUSING UNITS USING OTHER MEANS OF NON-SEWERED TREATMENT<br>AS: |           |         |           |       |           | SUBTOTAL | TOTAL     |
|--|-------|----------------|--|-----------|---------|-----------|-------|-----------|----------|-----------|
| STATE  | FIPS  | COUNTY         | URBAN  | %Subtotal | RURAL   | %Subtotal | FARM  | %Subtotal |          |           |
| PENNSYLVANIA   | 42023 | CAMERON        | -  | -         | 153.7   | 100.0     | -     | -         | 153.7    | 2,391.3   |
| PENNSYLVANIA   | 42025 | CARBON         | -  | -         | 0.0     | 100.0     | -     | -         | 0.0      | 0.5       |
| PENNSYLVANIA   | 42027 | CENTRE         | -  | -         | 432.4   | 95.4      | 20.6  | 4.6       | 453.0    | 42,683.0  |
| PENNSYLVANIA   | 42029 | CHESTER        | -  | -         | 131.2   | 95.1      | 6.8   | 4.9       | 138.0    | 8,929.1   |
| PENNSYLVANIA   | 42033 | CLEARFIELD     | -  | -         | 818.5   | 100.0     | -     | -         | 818.5    | 22,210.1  |
| PENNSYLVANIA   | 42035 | CLINTON        | -  | -         | 478.5   | 97.0      | 14.8  | 3.0       | 493.3    | 13,844.0  |
| PENNSYLVANIA   | 42037 | COLUMBIA       | 0.0  | 0.0       | 332.2   | 96.7      | 11.2  | 3.3       | 343.4    | 23,478.0  |
| PENNSYLVANIA   | 42041 | CUMBERLAND     | 61.2   | 9.7       | 563.2   | 89.5      | 4.7   | 0.7       | 629.0    | 73,451.9  |
| PENNSYLVANIA   | 42043 | DAUPHIN        | 265.6  | 36.0      | 473.2   | 64.0      | -     | -         | 738.8    | 95,264.0  |
| PENNSYLVANIA   | 42047 | ELK            | -  | -         | 46.4    | 100.0     | -     | -         | 46.4     | 2,418.2   |
| PENNSYLVANIA   | 42055 | FRANKLIN       | -  | -         | 696.2   | 92.8      | 53.6  | 7.2       | 749.9    | 45,675.0  |
| PENNSYLVANIA   | 42057 | FULTON         | -  | -         | 145.0   | 94.3      | 8.8   | 5.7       | 153.8    | 5,139.0   |
| PENNSYLVANIA   | 42061 | HUNTINGDON     | -  | -         | 472.3   | 96.6      | 16.7  | 3.4       | 489.0    | 15,227.0  |
| PENNSYLVANIA   | 42063 | INDIANA        | -  | -         | 88.2    | 96.9      | 2.9   | 3.1       | 91.0     | 1,193.3   |
| PENNSYLVANIA   | 42065 | JEFFERSON      | -  | -         | 0.1     | 100.0     | -     | -         | 0.1      | 1.2       |
| PENNSYLVANIA   | 42067 | JUNIATA        | -  | -         | 191.9   | 85.1      | 33.6  | 14.9      | 225.4    | 7,598.0   |
| PENNSYLVANIA   | 42069 | LACKAWANNA     | 92.5   | 28.5      | 232.2   | 71.5      | -     | -         | 324.7    | 82,849.4  |
| PENNSYLVANIA   | 42071 | LANCASTER      | 266.9  | 15.6      | 1,191.4 | 69.7      | 251.5 | 14.7      | 1,709.8  | 150,863.3 |
| PENNSYLVANIA   | 42075 | LEBANON        | 59.4   | 22.3      | 191.1   | 71.7      | 16.1  | 6.0       | 266.6    | 37,295.5  |
| PENNSYLVANIA   | 42079 | LUZERNE        | 259.1  | 31.3      | 570.0   | 68.7      | -     | -         | 829.1    | 123,304.9 |
| PENNSYLVANIA   | 42081 | LYCOMING       | 50.6   | 8.3       | 542.8   | 88.8      | 18.0  | 2.9       | 611.4    | 44,949.0  |
| PENNSYLVANIA   | 42083 | MCKEAN         | -  | -         | 1.1     | 100.0     | -     | -         | 1.1      | 78.2      |
| PENNSYLVANIA   | 42087 | MIFFLIN        | -  | -         | 382.8   | 83.7      | 74.8  | 16.3      | 457.6    | 17,697.0  |
| PENNSYLVANIA   | 42093 | MONTOUR        | 3.3  | 3.4       | 89.2    | 91.3      | 5.2   | 5.3       | 97.7     | 6,543.0   |
| PENNSYLVANIA   | 42097 | NORTHUMBERLAND | 32.7   | 8.3       | 347.7   | 88.7      | 11.7  | 3.0       | 392.1    | 38,736.0  |
| PENNSYLVANIA   | 42099 | PERRY          | -  | -         | 609.2   | 98.2      | 10.9  | 1.8       | 620.1    | 14,949.0  |
| PENNSYLVANIA   | 42105 | POTTER         | -  | -         | 142.1   | 100.0     | -     | -         | 142.1    | 2,073.1   |

Table 5

HOUSING UNITS AS URBAN, RURAL AND FARM  
 TYPES AND MEANS OF WASTE DISPOSAL:  
 COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
 COUNTY SUMMARIES  
 NCRI-CHESAPEAKE, Inc.

| c. HOUSING UNITS USING OTHER MEANS OF NON-SEWERED TREATMENT |       |              |       |           |         |           |      |           |          |  |           |
|---|-------|--------------|-------|-----------|---------|-----------|------|-----------|----------|--|-----------|
| AS:   |       |              |       |           |         |           |      |           |          |  |           |
| STATE   | FIPS  | COUNTY       | URBAN | %Subtotal | RURAL   | %Subtotal | FARM | %Subtotal | SUBTOTAL |  | TOTAL     |
| PENNSYLVANIA  | 42107 | SCHUYLKILL   | 9.8   | 1.7       | 357.6   | 96.7      | 9.4  | 1.6       | 576.9    |  | 25,139.2  |
| PENNSYLVANIA  | 42109 | SNYDER       | -     | -         | 382.1   | 82.2      | 82.5 | 17.8      | 464.6    |  | 12,764.0  |
| PENNSYLVANIA  | 42111 | SOMERSET     | -     | -         | 50.8    | 91.9      | 4.5  | 8.1       | 55.2     |  | 917.0     |
| PENNSYLVANIA  | 42113 | SULLIVAN     | -     | -         | 79.3    | 97.5      | 2.0  | 2.5       | 81.3     |  | 2,280.0   |
| PENNSYLVANIA  | 42115 | SUSQUEHANNA  | -     | -         | 491.3   | 97.3      | 13.6 | 2.7       | 504.9    |  | 14,898.0  |
| PENNSYLVANIA  | 42117 | TIOGA        | 4.8   | 1.0       | 462.1   | 93.8      | 26.0 | 5.3       | 492.9    |  | 14,974.0  |
| PENNSYLVANIA  | 42119 | UNION        | -     | -         | 117.7   | 84.6      | 21.5 | 15.4      | 139.2    |  | 11,689.0  |
| PENNSYLVANIA  | 42127 | WAYNE        | -     | -         | 16.7    | 92.0      | 1.5  | 8.0       | 18.1     |  | 475.5     |
| PENNSYLVANIA  | 42131 | WYOMING      | -     | -         | 180.9   | 97.6      | 4.5  | 2.4       | 185.3    |  | 10,002.0  |
| PENNSYLVANIA  | 42133 | YORK         | 108.1 | 7.3       | 1,307.2 | 88.6      | 59.5 | 4.0       | 1,474.8  |  | 128,666.0 |
| VIRGINIA  | 51001 | ACCOMACK     | -     | -         | 526.5   | 93.6      | 36.2 | 6.4       | 562.8    |  | 6,344.0   |
| VIRGINIA  | 51003 | ALBEMARLE    | 9.4   | 1.9       | 438.9   | 90.1      | 39.0 | 8.0       | 487.3    |  | 24,433.0  |
| VIRGINIA  | 51005 | ALLEGHANY    | -     | -         | 298.4   | 100.0     | -    | -         | 298.4    |  | 4,940.8   |
| VIRGINIA  | 51007 | AMELIA       | -     | -         | 217.6   | 90.9      | 21.9 | 9.1       | 239.5    |  | 3,131.0   |
| VIRGINIA  | 51009 | AMHERST      | 24.8  | 5.9       | 375.9   | 89.9      | 17.3 | 4.1       | 418.0    |  | 9,827.0   |
| VIRGINIA  | 51011 | APPOMATTOX   | -     | -         | 91.3    | 95.9      | 3.9  | 4.1       | 95.2     |  | 2,721.1   |
| VIRGINIA  | 51013 | ARLINGTON    | 105.0 | 100.0     | -       | -         | -    | -         | 105.0    |  | 78,520.0  |
| VIRGINIA  | 51015 | AUGUSTA      | 28.9  | 3.6       | 719.0   | 88.5      | 64.3 | 7.9       | 812.3    |  | 19,781.0  |
| VIRGINIA  | 51017 | BATH         | -     | -         | 216.4   | 92.2      | 20.1 | 7.8       | 256.5    |  | 1,894.6   |
| VIRGINIA  | 51019 | BEDFORD      | 16.2  | 12.7      | 108.3   | 84.6      | 3.5  | 2.7       | 128.0    |  | 3,416.1   |
| VIRGINIA  | 51023 | BOTETOURT    | -     | -         | 262.1   | 100.0     | -    | -         | 262.1    |  | 4,884.9   |
| VIRGINIA  | 51029 | BUCKINGHAM   | -     | -         | 356.8   | 95.2      | 18.0 | 4.8       | 374.8    |  | 4,341.0   |
| VIRGINIA  | 51031 | CAMPBELL     | 2.1   | 3.9       | 50.8    | 95.4      | 0.4  | 0.8       | 53.2     |  | 4,702.6   |
| VIRGINIA  | 51033 | CAROLINE     | -     | -         | 483.4   | 97.3      | 13.6 | 2.7       | 497.0    |  | 6,631.0   |
| VIRGINIA  | 51036 | CHARLES CITY | -     | -         | 210.9   | 100.0     | -    | -         | 210.9    |  | 2,161.0   |
| VIRGINIA  | 51037 | CHARLOTTE    | -     | -         | 0.0     | 96.2      | 0.0  | 3.8       | 0.0      |  | 0.5       |
| VIRGINIA  | 51041 | CHESTERFIELD | 158.2 | 56.6      | 121.4   | 43.4      | -    | -         | 279.6    |  | 73,441.1  |

HOUSING UNITS / URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                | e. HOUSING UNITS USING OTHER MEANS OF NON-SEWERED TREATMENT<br>AS: |           |       |           |      |           |          |           |
|--|-------|----------------|--|-----------|-------|-----------|------|-----------|----------|-----------|
| STATE  | FIPS  | COUNTY         | URBAN  | %Subtotal | RURAL | %Subtotal | FARM | %Subtotal | SUBTOTAL | TOTAL     |
| VIRGINIA   | 51043 | CLARKE         | 0.1  | 0.1       | 159.4 | 91.7      | 14.3 | 8.2       | 173.8    | 4,236.0   |
| VIRGINIA   | 51045 | CRAIG          | -  | -         | 98.5  | 100.0     | -    | -         | 98.5     | 1,410.7   |
| VIRGINIA   | 51047 | CULPEPER       | 30.2   | 1.8       | 461.8 | 89.0      | 26.6 | 5.1       | 518.6    | 9,757.0   |
| VIRGINIA   | 51049 | CUMBERLAND     | 9.9  | 3.2       | 265.1 | 86.2      | 32.7 | 10.6      | 307.7    | 2,813.0   |
| VIRGINIA   | 51053 | DINWIDDIE      | -  | -         | 38.1  | 93.5      | 2.6  | 6.5       | 40.8     | 2,636.7   |
| VIRGINIA   | 51057 | ESSEX          | -  | -         | 193.5 | 89.4      | 22.9 | 10.6      | 216.4    | 3,258.0   |
| VIRGINIA   | 51059 | FAIRFAX        | 545.2  | 88.8      | 68.4  | 11.2      | -    | -         | 613.6    | 292,345.4 |
| VIRGINIA   | 51061 | FAUQUIER       | 1.8  | 0.5       | 346.5 | 92.9      | 24.7 | 6.6       | 373.0    | 16,509.0  |
| VIRGINIA   | 51065 | FLUYANNA       | -  | -         | 230.0 | 93.2      | 16.7 | 6.8       | 246.6    | 4,518.0   |
| VIRGINIA   | 51069 | FREDERICK      | -  | -         | 597.4 | 97.1      | 17.7 | 2.9       | 615.1    | 16,470.0  |
| VIRGINIA   | 51071 | GILES          | -  | -         | 6.9   | 100.0     | -    | -         | 6.9      | 115.7     |
| VIRGINIA   | 51073 | GLOUCESTER     | 54.9   | 11.4      | 411.2 | 85.4      | 15.5 | 3.2       | 481.6    | 10,966.0  |
| VIRGINIA   | 51075 | GOOCHLAND      | -  | -         | 308.9 | 100.0     | -    | -         | 308.9    | 4,880.0   |
| VIRGINIA   | 51079 | GREENE         | -  | -         | 171.4 | 90.4      | 18.2 | 9.6       | 189.6    | 3,749.0   |
| VIRGINIA   | 51085 | HANOVER        | 61.3   | 9.4       | 590.5 | 90.6      | -    | -         | 651.8    | 22,628.0  |
| VIRGINIA   | 51087 | HENRICO        | 116.0  | 39.9      | 175.1 | 60.1      | -    | -         | 291.1    | 89,138.0  |
| VIRGINIA   | 51091 | HIGHLAND       | -  | -         | 135.7 | 77.6      | 39.1 | 22.4      | 174.8    | 1,080.8   |
| VIRGINIA   | 51093 | ISLE OF WIGHT  | 1.4  | 1.1       | 123.4 | 91.9      | 9.5  | 7.1       | 134.3    | 6,302.4   |
| VIRGINIA   | 51095 | JAMES CITY     | 18.2   | 18.2      | 79.8  | 79.8      | 1.9  | 1.9       | 99.9     | 12,968.0  |
| VIRGINIA   | 51097 | KING AND QUEEN | -  | -         | 133.8 | 86.6      | 20.7 | 13.4      | 154.5    | 2,339.0   |
| VIRGINIA   | 51099 | KING GEORGE    | -  | -         | 145.4 | 97.5      | 3.8  | 2.5       | 149.1    | 4,736.0   |
| VIRGINIA   | 51101 | KING WILLIAM   | -  | -         | 170.0 | 91.5      | 15.8 | 8.5       | 185.8    | 3,834.0   |
| VIRGINIA   | 51103 | LANCASTER      | -  | -         | 255.0 | 95.9      | 10.9 | 4.1       | 266.9    | 4,564.0   |
| VIRGINIA   | 51107 | LOUDOUN        | 14.6   | 4.6       | 276.3 | 87.5      | 24.8 | 7.8       | 315.7    | 30,490.0  |
| VIRGINIA   | 51109 | LOUISA         | -  | -         | 558.2 | 92.9      | 42.8 | 7.1       | 601.0    | 7,427.0   |
| VIRGINIA   | 51111 | LUNENBERG      | -  | -         | 0.0   | 95.7      | 0.0  | 4.3       | 0.0      | 0.9       |
| VIRGINIA   | 51113 | MADISON        | -  | -         | 326.1 | 93.4      | 22.9 | 6.6       | 349.0    | 4,144.0   |

Table 5

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

|          |       |                | c. HOUSING UNITS USING OTHER MEANS OF NON-SEWERED TREATMENT |           |       |           |      |           | SUBTOTAL | TOTAL    |
|----------|-------|----------------|---|-----------|-------|-----------|------|-----------|----------|----------|
| AS:      |       |                | URBAN   |           | RURAL |           | FARM |           |          |          |
| STATE    | FIPS  | COUNTY         | URBAN   | %Subtotal | RURAL | %Subtotal | FARM | %Subtotal |          |          |
| VIRGINIA | 51115 | MATHEWS        | -   | -         | 188.7 | 97.8      | 4.2  | 2.2       | 193.0    | 3,530.0  |
| VIRGINIA | 51119 | MIDDLESEX      | -   | -         | 139.4 | 95.5      | 6.5  | 4.5       | 146.0    | 3,530.0  |
| VIRGINIA | 51121 | MONTGOMERY     | -   | -         | 18.5  | 100.0     | -    | -         | 18.5     | 213.7    |
| VIRGINIA | 51125 | NELSON         | -   | -         | 680.3 | 92.9      | 51.6 | 7.1       | 731.9    | 4,807.0  |
| VIRGINIA | 51127 | NEW KENT       | -   | -         | 84.2  | 100.0     | -    | -         | 84.2     | 3,718.0  |
| VIRGINIA | 51131 | NORTHAMPTON    | -   | -         | 235.4 | 91.9      | 20.8 | 8.1       | 256.2    | 3,341.5  |
| VIRGINIA | 51133 | NORTHUMBERLAND | -   | -         | 277.9 | 91.6      | 25.6 | 8.4       | 303.5    | 4,492.0  |
| VIRGINIA | 51135 | NOTTOWAY       | -   | -         | 122.9 | 90.1      | 13.5 | 9.9       | 136.4    | 2,870.3  |
| VIRGINIA | 51137 | ORANOE         | 0.4   | 0.1       | 264.0 | 93.8      | 17.2 | 6.1       | 281.6    | 7,930.0  |
| VIRGINIA | 51139 | PAGE           | 2.1   | 0.7       | 278.9 | 96.4      | 8.4  | 2.9       | 289.4    | 8,055.0  |
| VIRGINIA | 51145 | POWHATAN       | -   | -         | 147.5 | 100.0     | -    | -         | 147.5    | 4,672.0  |
| VIRGINIA | 51147 | PRINCE EDWARD  | 0.6   | 0.2       | 224.7 | 95.4      | 10.2 | 4.3       | 235.5    | 5,285.7  |
| VIRGINIA | 51149 | PRINCE GEORGE  | 18.5  | 23.2      | 60.5  | 75.6      | 1.0  | 1.2       | 80.0     | 4,268.3  |
| VIRGINIA | 51153 | PRINCE WILLIAM | 74.6  | 24.6      | 224.3 | 74.0      | 4.0  | 1.3       | 302.9    | 69,709.0 |
| VIRGINIA | 51157 | RAPPAHANNOCK   | -   | -         | 196.5 | 92.9      | 15.0 | 7.1       | 211.5    | 2,496.0  |
| VIRGINIA | 51159 | RICHMOND       | -   | -         | 212.7 | 85.9      | 35.0 | 14.1      | 247.7    | 2,645.0  |
| VIRGINIA | 51161 | ROANOKE        | -   | -         | 3.4   | 100.0     | -    | -         | 3.4      | 375.0    |
| VIRGINIA | 51163 | ROCKBRIDGE     | -   | -         | 578.7 | 93.2      | 42.5 | 6.8       | 621.2    | 7,202.0  |
| VIRGINIA | 51165 | ROCKINGHAM     | -   | -         | 877.8 | 90.8      | 88.7 | 9.2       | 966.6    | 20,750.0 |
| VIRGINIA | 51171 | SHENANDOAH     | 16.1  | 2.2       | 665.3 | 92.2      | 40.5 | 5.6       | 721.9    | 12,452.0 |
| VIRGINIA | 51177 | SPOTSYLVANIA   | 6.1   | 1.6       | 377.0 | 96.9      | 5.8  | 1.5       | 388.9    | 18,945.0 |
| VIRGINIA | 51179 | STAFFORD       | 17.1  | 5.6       | 288.1 | 93.6      | 2.7  | 0.9       | 307.9    | 19,415.0 |
| VIRGINIA | 51181 | SURRY          | -   | -         | 67.8  | 93.4      | 4.8  | 6.6       | 72.6     | 1,167.4  |
| VIRGINIA | 51187 | WARREN         | 2.2   | 1.0       | 228.5 | 97.5      | 3.6  | 1.5       | 234.4    | 9,879.0  |
| VIRGINIA | 51193 | WESTMORELAND   | 3.5   | 0.9       | 356.1 | 90.3      | 35.0 | 8.9       | 394.5    | 6,057.0  |
| VIRGINIA | 51199 | YORK           | 15.8  | 35.1      | 28.6  | 63.5      | 0.6  | 1.4       | 45.0     | 14,474.0 |
| VIRGINIA | 51510 | ALEXANDRIA     | 80.8  | 100.0     | -     | -         | -    | -         | 80.8     | 53,280.0 |

Table 5

HOUSING UNITS AND URBAN, RURAL AND FARM  
 TYPES AND MEANS OF WASTE DISPOSAL  
 COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
 COUNTY SUMMARIES  
 NCRI-CHESAPEAKE, Inc.

|          |       |                    | c. HOUSING UNITS USING OTHER MEANS OF NON-SEWERED TREATMENT |           |       |           |      |           | SUBTOTAL | TOTAL    |
|----------|-------|--------------------|---|-----------|-------|-----------|------|-----------|----------|----------|
| AS:      |       |                    | URBAN   | %Subtotal | RURAL | %Subtotal | FARM | %Subtotal |          |          |
| STATE    | FIPS  | COUNTY             |   |           |       |           |      |           |          |          |
| VIRGINIA | 51530 | BUENA VISTA        | 23.2  | 100.0     | -     | -         | -    | -         | 23.2     | 2,037.0  |
| VIRGINIA | 51540 | CHARLOTTESVILLE    | 34.5  | 100.0     | -     | -         | -    | -         | 34.5     | 15,466.0 |
| VIRGINIA | 51550 | CHESAPEAKE CITY    | 111.9   | 99.4      | 0.3   | 0.3       | 0.4  | 0.3       | 112.6    | 44,742.3 |
| VIRGINIA | 51560 | CLIFTON FORGE      | -   | -         | -     | -         | -    | -         | -        | 1,611.0  |
| VIRGINIA | 51570 | COLONIAL HEIGHTS   | -   | -         | -     | -         | -    | -         | -        | 6,363.0  |
| VIRGINIA | 51580 | COVINGTON          | -   | -         | -     | -         | -    | -         | -        | 2,545.0  |
| VIRGINIA | 51600 | FAIRFAX            | 4.8   | 100.0     | -     | -         | -    | -         | 4.8      | 6,936.0  |
| VIRGINIA | 51610 | FALLS CHURCH       | 25.6  | 100.0     | -     | -         | -    | -         | 25.6     | 4,195.0  |
| VIRGINIA | 51630 | FREDERICKSBURG     | 8.4   | 100.0     | -     | -         | -    | -         | 8.4      | 7,450.0  |
| VIRGINIA | 51650 | HAMPTON CITY       | 97.8  | 100.0     | -     | -         | -    | -         | 97.8     | 49,673.0 |
| VIRGINIA | 51660 | HARRISONBURG       | 16.4  | 100.0     | -     | -         | -    | -         | 16.4     | 9,962.0  |
| VIRGINIA | 51670 | HOPEWELL           | 94.4  | 100.0     | -     | -         | -    | -         | 94.4     | 9,014.0  |
| VIRGINIA | 51678 | LEXINGTON          | -   | -         | -     | -         | -    | -         | -        | 1,740.0  |
| VIRGINIA | 51680 | LYNCHBURG          | 35.2  | 100.0     | -     | -         | -    | -         | 35.2     | 25,143.0 |
| VIRGINIA | 51683 | MANASSES CITY      | 9.0   | 100.0     | -     | -         | -    | -         | 9.0      | 9,292.0  |
| VIRGINIA | 51685 | MANASSES PARK CIT  | -   | -         | -     | -         | -    | -         | -        | 2,182.0  |
| VIRGINIA | 51700 | NEWPORT NEWS CITY  | 142.9   | 100.0     | -     | -         | -    | -         | 142.9    | 63,952.0 |
| VIRGINIA | 51710 | NORFOLK CITY       | 201.3   | 100.0     | -     | -         | -    | -         | 201.3    | 89,478.0 |
| VIRGINIA | 51730 | PETERSBURG         | 28.2  | 100.0     | -     | -         | -    | -         | 28.2     | 12,538.4 |
| VIRGINIA | 51735 | POQUOSON           | 4.7   | 100.0     | -     | -         | -    | -         | 4.7      | 3,769.0  |
| VIRGINIA | 51740 | PORTSMOUTH CITY    | 120.4   | 100.0     | -     | -         | -    | -         | 120.4    | 38,741.0 |
| VIRGINIA | 51760 | RICHMOND CITY      | 210.8   | 100.0     | -     | -         | -    | -         | 210.8    | 85,337.0 |
| VIRGINIA | 51790 | STAUNTON           | 38.2  | 100.0     | -     | -         | -    | -         | 38.2     | 9,100.0  |
| VIRGINIA | 51800 | SUFFOLK CITY       | 324.8   | 82.1      | 61.8  | 15.6      | 8.8  | 2.2       | 395.4    | 14,530.1 |
| VIRGINIA | 51810 | VIRGINIA BEACH CIT | 120.6   | 100.0     | -     | -         | -    | -         | 120.6    | 94,218.0 |
| VIRGINIA | 51820 | WAYNESBORO         | 36.4  | 100.0     | -     | -         | -    | -         | 36.4     | 6,965.0  |
| VIRGINIA | 51830 | WILLIAMSBURG       | 6.6   | 100.0     | -     | -         | -    | -         | 6.6      | 3,468.0  |

Table 5

HOUSING UNITS AS URBAN, RURAL AND FARM  
TYPES AND MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |            | e. HOUSING UNITS USING OTHER MEANS OF NON-SEWERED TREATMENT<br>AS: |             |                 |             |                |            |                 |                    |
|--|-------|------------|--|-------------|-----------------|-------------|----------------|------------|-----------------|--------------------|
| STATE  | FIPS  | COUNTY     | URBAN  | %Subtotal   | RURAL           | %Subtotal   | FARM           | %Subtotal  | SUBTOTAL        | TOTAL              |
| VIRGINIA   | 51840 | WINCHESTER | -  | -           | -               | -           | -              | -          | -               | 8,581.0            |
| WEST VIRGINIA  | 54003 | BERKELEY   | 28.4   | 3.9         | 657.7           | 91.2        | 34.9           | 4.8        | 721.0           | 22,350.0           |
| WEST VIRGINIA  | 54023 | GRANT      | -  | -           | 224.3           | 89.1        | 27.5           | 10.9       | 251.9           | 3,924.0            |
| WEST VIRGINIA  | 54025 | GREENBRIAR | -  | -           | 0.1             | 100.0       | -              | -          | 0.1             | 1.5                |
| WEST VIRGINIA  | 54027 | HAMPSHIRE  | -  | -           | 592.9           | 90.0        | 66.0           | 10.0       | 659.0           | 6,182.0            |
| WEST VIRGINIA  | 54031 | HARDY      | -  | -           | 441.1           | 86.1        | 71.3           | 13.9       | 512.4           | 4,286.0            |
| WEST VIRGINIA  | 54037 | JEFFERSON  | -  | -           | 168.0           | 91.8        | 15.0           | 8.2        | 183.0           | 12,914.0           |
| WEST VIRGINIA  | 54057 | MINERAL    | 32.6   | 20.6        | 119.3           | 75.7        | 5.8            | 3.7        | 157.7           | 9,981.0            |
| WEST VIRGINIA  | 54063 | MONROE     | -  | -           | 35.9            | 98.6        | 0.5            | 1.4        | 36.4            | 295.0              |
| WEST VIRGINIA  | 54065 | MORGAN     | -  | -           | 163.4           | 96.5        | 6.0            | 3.5        | 169.4           | 4,731.0            |
| WEST VIRGINIA  | 54071 | PENDLETON  | -  | -           | 457.4           | 81.7        | 102.6          | 18.3       | 560.0           | 3,060.4            |
| WEST VIRGINIA  | 54075 | POCAHONTAS | -  | -           | 0.1             | 92.2        | 0.0            | 7.8        | 0.1             | 1.1                |
| WEST VIRGINIA  | 54077 | PRESTON    | -  | -           | 1.0             | 94.3        | 0.1            | 5.7        | 1.1             | 17.4               |
| WEST VIRGINIA  | 54083 | RANDOLPH   | -  | -           | 0.1             | 100.0       | -              | -          | 0.1             | 0.7                |
| WEST VIRGINIA  | 54093 | TUCKER     | -  | -           | 0.7             | 100.0       | -              | -          | 0.7             | 13.6               |
| <b>Grand Total</b>   |       |            | <b>11,404.4</b>  | <b>18.6</b> | <b>46,661.3</b> | <b>76.3</b> | <b>3,120.7</b> | <b>5.1</b> | <b>61,186.5</b> | <b>5,292,570.0</b> |

Table 5

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                 | 2. Population                 |              |           |              |       |              |                                 |            |            |
|--|-------|-----------------|-------------------------------|--------------|-----------|--------------|-------|--------------|---------------------------------|------------|------------|
|  |       |                 | a. POPULATION USING SEWER AS: |              |           |              |       |              | TOTAL POPULATION<br>USING SEWER |            |            |
| STATE  | FIPS  | COUNTY          | URBAN                         | % Mean Total | RURAL     | % Mean Total | FARM  | % Mean Total | MIN                             | MEAN       | MAX        |
| DELAWARE   | 10001 | KENT            | 24.26                         | 1.14         | 2,088.47  | 97.85        | 21.44 | 1.00         | 1,683.20                        | 2,134.18   | 2,717.04   |
| DELAWARE   | 10003 | NEW CASTLE      | 930.31                        | 80.08        | 229.86    | 19.79        | 1.58  | 0.14         | 935.04                          | 1,161.75   | 1,392.74   |
| DELAWARE   | 10005 | SUSSEX          | 8,241.62                      | 62.07        | 5,017.49  | 37.79        | 19.41 | 0.15         | 10,858.68                       | 13,278.52  | 15,887.70  |
| DISTRICT OF COLUMBIA   | 11001 | WASHINGTON      | 560,471.97                    | 100.00       | -         | -            | -     | -            | 552,283.68                      | 560,471.97 | 568,680.83 |
| MARYLAND   | 24001 | ALLEGANY        | 46,638.30                     | 79.01        | 12,377.92 | 20.97        | 9.42  | 0.02         | 54,606.69                       | 59,025.89  | 63,643.42  |
| MARYLAND   | 24003 | ANNE ARUNDEL    | 299,476.62                    | 99.19        | 2,427.40  | 0.80         | 14.71 | 0.00         | 284,845.87                      | 301,926.36 | 319,579.32 |
| MARYLAND   | 24005 | BALTIMORE       | 586,138.46                    | 99.37        | 3,697.20  | 0.63         | -     | -            | 572,781.20                      | 589,833.23 | 607,358.50 |
| MARYLAND   | 24009 | CALVERT         | 173.38                        | 3.12         | 5,381.10  | 96.76        | 6.70  | 0.12         | 3,874.04                        | 5,561.18   | 7,394.61   |
| MARYLAND   | 24011 | CAROLINE        | 2,502.06                      | 30.77        | 5,560.16  | 68.39        | 68.23 | 0.14         | 6,306.11                        | 8,130.45   | 10,071.75  |
| MARYLAND   | 24013 | CARROLL         | 31,815.35                     | 76.95        | 9,528.68  | 23.05        | 3.34  | 0.91         | 35,317.49                       | 41,347.35  | 47,723.73  |
| MARYLAND   | 24015 | CECIL           | 9,358.97                      | 38.77        | 14,731.28 | 61.03        | 47.05 | 0.19         | 19,207.92                       | 24,137.32  | 29,281.28  |
| MARYLAND   | 24017 | CHARLES         | 53,051.06                     | 92.14        | 4,517.10  | 7.85         | 7.79  | 0.01         | 53,651.93                       | 57,575.88  | 61,823.24  |
| MARYLAND   | 24019 | DORCHESTER      | 11,040.52                     | 71.04        | 4,467.16  | 28.74        | 33.09 | 0.21         | 14,121.76                       | 15,540.78  | 17,072.56  |
| MARYLAND   | 24021 | FREDERICK       | 65,796.94                     | 87.64        | 9,276.78  | 12.36        | -     | -            | 67,766.25                       | 75,073.79  | 82,802.71  |
| MARYLAND   | 24023 | GARRETT         | -                             | -            | 717.57    | 99.61        | 2.78  | 0.39         | 354.55                          | 720.35     | 1,110.95   |
| MARYLAND   | 24025 | HARFORD         | 102,630.59                    | 96.57        | 3,647.00  | 3.43         | -     | -            | 99,181.81                       | 106,277.59 | 113,813.67 |
| MARYLAND   | 24027 | HOWARD          | 146,032.21                    | 99.13        | 1,297.08  | 0.86         | 16.59 | 0.01         | 144,025.74                      | 150,345.80 | 156,813.32 |
| MARYLAND   | 24029 | KENT            | 2,815.22                      | 38.21        | 4,490.82  | 60.95        | 62.21 | 0.14         | 5,445.10                        | 7,368.24   | 9,337.33   |
| MARYLAND   | 24031 | MONTGOMERY      | 693,614.96                    | 99.31        | 4,764.00  | 0.68         | 18.19 | 0.00         | 683,508.93                      | 698,400.37 | 713,613.87 |
| MARYLAND   | 24033 | PRINCE GEORGE'S | 677,748.43                    | 99.01        | 6,682.72  | 0.98         | -     | -            | 668,521.12                      | 684,514.44 | 700,513.81 |
| MARYLAND   | 24035 | QUEEN ANNE'S    | -                             | -            | 9,467.00  | 99.34        | 62.43 | 0.66         | 7,221.05                        | 9,529.44   | 12,019.15  |
| MARYLAND   | 24037 | SAINT MARY'S    | 12,720.98                     | 59.94        | 8,474.88  | 39.93        | 28.06 | 0.13         | 17,433.30                       | 21,223.96  | 25,577.61  |
| MARYLAND   | 24039 | SOMERSET        | 2,800.27                      | 36.57        | 4,829.85  | 63.07        | 27.70 | 0.36         | 6,303.66                        | 7,657.82   | 9,024.97   |
| MARYLAND   | 24041 | TALBOT          | 8,405.06                      | 61.49        | 5,241.92  | 38.35        | 22.01 | 0.16         | 11,843.41                       | 13,668.99  | 15,717.22  |
| MARYLAND   | 24043 | WASHINGTON      | 57,048.01                     | 88.04        | 7,721.18  | 11.92        | 27.17 | 0.04         | 59,184.40                       | 64,796.40  | 70,801.13  |
| MARYLAND   | 24045 | WICOMICO        | 22,195.91                     | 68.86        | 9,740.85  | 30.22        | 41.74 | 0.13         | 28,209.61                       | 32,231.56  | 36,452.61  |
| MARYLAND   | 24047 | WORCESTER       | 3,942.76                      | 63.29        | 2,278.26  | 36.57        | 8.98  | 0.14         | 5,473.37                        | 6,230.00   | 7,030.10   |
| MARYLAND   | 24310 | BALTIMORE CITY  | 699,657.62                    | 100.00       | -         | -            | -     | -            | 680,122.67                      | 699,657.62 | 719,192.27 |

Table 6

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |             | 2. Population                 |              |           |              |       |              |                                 |            |            |
|--|-------|-------------|-------------------------------|--------------|-----------|--------------|-------|--------------|---------------------------------|------------|------------|
|  |       |             | a. POPULATION USING SEWER AS: |              |           |              |       |              | TOTAL POPULATION<br>USING SEWER |            |            |
| STATE  | FIPS  | COUNTY      | URBAN                         | % Mean Total | RURAL     | % Mean Total | FARM  | % Mean Total | MIN                             | MEAN       | MAX        |
| NEW YORK   | 36003 | ALLEGANY    | 628.72                        | 93.34        | 43.44     | 6.46         | -     | -            | 430.62                          | 672.16     | 926.40     |
| NEW YORK   | 36007 | BROOME      | 130,544.80                    | 95.21        | 6,568.96  | 4.79         | -     | -            | 128,759.23                      | 137,113.80 | 145,996.10 |
| NEW YORK   | 36011 | CAYUGA      | -                             | -            | 0.64      | 99.69        | 0.00  | 0.31         | -                               | 0.65       | 2.39       |
| NEW YORK   | 36015 | CHEMUNG     | 51,946.27                     | 97.69        | 1,230.90  | 2.31         | -     | -            | 49,304.09                       | 53,177.14  | 57,326.82  |
| NEW YORK   | 36017 | CHENANGO    | 7,305.41                      | 53.36        | 6,377.11  | 46.58        | 8.00  | 0.06         | 10,646.91                       | 13,690.52  | 17,086.43  |
| NEW YORK   | 36023 | CORTLAND    | 18,947.53                     | 81.90        | 4,183.37  | 18.08        | 5.18  | 0.02         | 20,866.38                       | 23,136.11  | 25,621.80  |
| NEW YORK   | 36025 | DELAWARE    | 4,604.52                      | 93.81        | 333.73    | 6.19         | -     | -            | 4,541.81                        | 4,908.25   | 5,463.35   |
| NEW YORK   | 36043 | HERKIMER    | -                             | -            | 18.12     | 99.85        | 0.13  | 0.15         | -                               | 88.25      | 227.73     |
| NEW YORK   | 36051 | LIVINGSTON  | -                             | -            | -         | -            | -     | -            | -                               | -          | -          |
| NEW YORK   | 36053 | MADISON     | 2,256.62                      | 93.26        | 162.94    | 6.73         | 0.24  | 0.01         | 1,904.02                        | 2,419.80   | 3,066.24   |
| NEW YORK   | 36065 | ONEIDA EAST | 173.99                        | 35.72        | 311.22    | 63.90        | 1.84  | 0.38         | 376.11                          | 487.05     | 636.87     |
| NEW YORK   | 36067 | ONONDAGA    | -                             | -            | 710.74    | 99.99        | 0.09  | 0.01         | 587.61                          | 750.84     | 942.72     |
| NEW YORK   | 36069 | ONTARIO     | -                             | -            | 1.62      | 99.94        | 0.00  | 0.06         | -                               | 1.62       | 6.02       |
| NEW YORK   | 36077 | OTSEGO      | 9,800.06                      | 61.98        | 5,993.68  | 37.91        | 17.14 | 0.11         | 13,291.00                       | 15,810.89  | 18,953.64  |
| NEW YORK   | 36095 | SCHOHARIE   | -                             | -            | 6.66      | 99.61        | 0.03  | 0.40         | -                               | 6.69       | 35.64      |
| NEW YORK   | 36097 | SCHUYLER    | -                             | -            | 33.83     | 100.00       | -     | -            | -                               | 33.83      | 120.66     |
| NEW YORK   | 36101 | STEBEN      | 29,195.56                     | 73.69        | 10,421.81 | 26.31        | -     | -            | 35,892.46                       | 39,617.37  | 43,885.77  |
| NEW YORK   | 36107 | TIOGA       | 14,697.56                     | 84.94        | 2,603.11  | 15.04        | 1.93  | 0.01         | 14,924.68                       | 17,102.61  | 20,037.38  |
| NEW YORK   | 36109 | TOMPKINS    | -                             | -            | 441.67    | 99.87        | 0.39  | 0.13         | 182.87                          | 442.26     | 743.41     |
| NEW YORK   | 36123 | YATES       | -                             | -            | 3.94      | 100.00       | -     | -            | -                               | 3.94       | 13.74      |
| PENNSYLVANIA   | 42001 | ADAMS       | 11,202.69                     | 33.40        | 22,325.22 | 66.56        | 15.63 | 0.05         | 29,912.26                       | 33,543.56  | 37,354.86  |
| PENNSYLVANIA   | 42009 | BEDFORD     | 3,091.51                      | 29.78        | 7,249.82  | 70.02        | 21.10 | 0.20         | 8,566.06                        | 10,182.43  | 12,313.67  |
| PENNSYLVANIA   | 42011 | BERKS       | 136.52                        | 9.94         | 1,227.84  | 89.42        | 3.59  | 0.26         | 885.07                          | 1,373.12   | 1,884.24   |
| PENNSYLVANIA   | 42013 | BLAIR       | 76,535.67                     | 84.52        | 14,015.82 | 15.48        | -     | -            | 83,568.91                       | 90,351.52  | 97,675.25  |
| PENNSYLVANIA   | 42015 | BRADFORD    | 11,204.22                     | 62.48        | 6,769.64  | 37.42        | 18.30 | 0.10         | 15,795.69                       | 17,932.16  | 20,235.66  |
| PENNSYLVANIA   | 42021 | CAMBRIA     | 2,508.00                      | 15.22        | 13,947.12 | 84.63        | 24.55 | 0.15         | 15,273.66                       | 16,479.66  | 17,717.18  |
| PENNSYLVANIA   | 42023 | CAMERON     | 2,450.17                      | 83.65        | 479.01    | 16.35        | 0.01  | 0.00         | 2,617.16                        | 2,929.19   | 3,250.50   |
| PENNSYLVANIA   | 42025 | CARBON      | -                             | -            | 0.05      | 100.00       | -     | -            | 0.02                            | 0.05       | 0.08       |

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                | 2. Population                 |              |           |              |                                 |              |            |            |            |
|--|-------|----------------|-------------------------------|--------------|-----------|--------------|---------------------------------|--------------|------------|------------|------------|
|  |       |                | a. POPULATION USING SEWER AS: |              |           |              | TOTAL POPULATION<br>USING SEWER |              |            |            |            |
| STATE  | FIPS  | COUNTY         | URBAN                         | % Mean Total | RURAL     | % Mean Total | FARM                            | % Mean Total | MIN        | MEAN       | MAX        |
| PENNSYLVANIA   | 42027 | CENTRE         | 57,146.11                     | 79.58        | 14,590.67 | 20.32        | 73.95                           | 0.10         | 66,930.89  | 71,810.76  | 76,760.24  |
| PENNSYLVANIA   | 42029 | CHESTER        | 3,787.24                      | 68.55        | 1,736.07  | 31.42        | 1.85                            | 0.03         | 4,827.75   | 5,525.15   | 6,295.13   |
| PENNSYLVANIA   | 42033 | CLEARFIELD     | 9,112.55                      | 46.24        | 10,592.84 | 53.76        | -                               | -            | 14,905.97  | 19,705.37  | 22,513.65  |
| PENNSYLVANIA   | 42035 | CLINTON        | 7,177.62                      | 33.41        | 14,279.94 | 66.46        | 28.69                           | 0.13         | 19,922.40  | 21,486.22  | 23,072.05  |
| PENNSYLVANIA   | 42037 | COLUMBIA       | 19,484.97                     | 81.34        | 4,455.98  | 18.60        | 15.37                           | 0.06         | 21,894.05  | 23,956.36  | 26,018.00  |
| PENNSYLVANIA   | 42041 | CUMBERLAND     | 110,844.64                    | 85.48        | 18,745.23 | 14.46        | 82.23                           | 0.06         | 121,498.63 | 129,672.09 | 137,970.04 |
| PENNSYLVANIA   | 42043 | DAUPHIN        | 166,274.32                    | 91.75        | 14,775.76 | 8.15         | 134.32                          | 0.07         | 171,513.75 | 181,218.10 | 191,065.58 |
| PENNSYLVANIA   | 42047 | ELK            | 453.50                        | 23.89        | 1,445.13  | 76.11        | 0.01                            | 0.00         | 1,414.00   | 1,898.66   | 2,437.23   |
| PENNSYLVANIA   | 42053 | FRANKLIN       | 33,426.90                     | 47.84        | 36,402.21 | 52.09        | 48.21                           | 0.07         | 62,680.84  | 69,877.34  | 77,323.38  |
| PENNSYLVANIA   | 42057 | FULTON         | -                             | -            | 2,317.53  | 99.81        | 4.31                            | 0.19         | 2,017.89   | 2,321.88   | 2,679.57   |
| PENNSYLVANIA   | 42061 | HUNTINGDON     | 8,606.00                      | 62.60        | 5,136.04  | 37.36        | 5.61                            | 0.04         | 12,656.29  | 13,747.56  | 14,944.42  |
| PENNSYLVANIA   | 42063 | INDIANA        | -                             | -            | 239.23    | 99.98        | 0.06                            | 0.02         | 129.07     | 239.29     | 354.83     |
| PENNSYLVANIA   | 42065 | JEFFERSON      | -                             | -            | 0.02      | 100.00       | -                               | -            | -          | 0.02       | 3.06       |
| PENNSYLVANIA   | 42067 | JUNIATA        | -                             | -            | 4,403.10  | 99.70        | 13.24                           | 0.30         | 3,379.61   | 4,416.34   | 5,289.67   |
| PENNSYLVANIA   | 42069 | LACKAWANNA     | 172,414.70                    | 95.62        | 7,906.38  | 4.38         | -                               | -            | 175,058.50 | 180,321.10 | 185,737.60 |
| PENNSYLVANIA   | 42071 | LANCASTER      | 223,276.53                    | 85.10        | 38,223.54 | 14.57        | 842.61                          | 0.32         | 241,428.81 | 262,359.18 | 284,071.32 |
| PENNSYLVANIA   | 42075 | LEBANON        | 39,267.85                     | 65.32        | 20,836.97 | 34.66        | 10.15                           | 0.02         | 55,708.01  | 60,114.96  | 64,670.14  |
| PENNSYLVANIA   | 42079 | LUZERNE        | 215,039.08                    | 88.88        | 26,828.81 | 11.09        | 83.52                           | 0.03         | 230,669.68 | 241,951.09 | 253,617.69 |
| PENNSYLVANIA   | 42081 | LYCOMING       | 55,238.43                     | 90.60        | 5,731.82  | 9.40         | -                               | -            | 57,184.97  | 60,970.25  | 64,966.27  |
| PENNSYLVANIA   | 42083 | MCKEAN         | -                             | -            | 11.75     | 99.96        | 0.01                            | 0.00         | 7.27       | 11.76      | 19.76      |
| PENNSYLVANIA   | 42087 | MIFFLIN        | 9,211.34                      | 37.94        | 14,949.04 | 61.38        | 116.82                          | 0.41         | 21,601.45  | 24,277.18  | 27,137.52  |
| PENNSYLVANIA   | 42093 | MONTGOMERY     | 6,968.68                      | 87.71        | 969.47    | 12.20        | 6.99                            | 0.09         | 7,561.56   | 7,945.14   | 8,544.16   |
| PENNSYLVANIA   | 42097 | NORTHUMBERLAND | 46,358.73                     | 71.19        | 18,730.01 | 28.76        | 32.57                           | 0.01         | 61,442.13  | 65,121.23  | 68,830.80  |
| PENNSYLVANIA   | 42099 | PERRY          | 2,319.74                      | 21.35        | 8,527.99  | 78.50        | 15.96                           | 0.15         | 9,330.36   | 10,863.68  | 12,565.76  |
| PENNSYLVANIA   | 42105 | POTTER         | -                             | -            | 1,682.44  | 99.14        | 14.66                           | 0.86         | 1,493.96   | 1,697.10   | 1,930.64   |
| PENNSYLVANIA   | 42107 | SCHUYLKILL     | 19,548.03                     | 57.73        | 14,273.38 | 42.15        | 42.42                           | 0.13         | 31,258.79  | 33,863.84  | 36,624.13  |
| PENNSYLVANIA   | 42109 | SNYDER         | 3,936.57                      | 27.49        | 10,336.01 | 72.17        | 49.71                           | 0.35         | 12,726.03  | 14,322.30  | 15,960.06  |
| PENNSYLVANIA   | 42111 | SOMERSET       | -                             | -            | 24.29     | 99.81        | 0.05                            | 0.19         | 8.15       | 24.33      | 51.46      |

Table 6

DD

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |              | 2. Population                 |              |           |              |                              |              |            |            |            |
|--|-------|--------------|-------------------------------|--------------|-----------|--------------|------------------------------|--------------|------------|------------|------------|
|  |       |              | a. POPULATION USING SEWER AS: |              |           |              | TOTAL POPULATION USING SEWER |              |            |            |            |
| STATE  | FIPS  | COUNTY       | URBAN                         | % Mean Total | RURAL     | % Mean Total | FARM                         | % Mean Total | MIN        | MEAN       | MAX        |
| PENNSYLVANIA   | 42113 | SULLIVAN     | -                             | -            | 1,073.11  | 99.76        | 2.55                         | 0.24         | 815.78     | 1,075.67   | 1,343.68   |
| PENNSYLVANIA   | 42115 | SUSQUEHANNA  | -                             | -            | 9,731.44  | 99.88        | 12.04                        | 0.12         | 8,670.17   | 9,743.48   | 10,894.00  |
| PENNSYLVANIA   | 42117 | TIOGA        | 5,012.43                      | 45.94        | 5,966.14  | 53.92        | 15.45                        | 0.14         | 9,799.20   | 11,064.03  | 12,494.07  |
| PENNSYLVANIA   | 42119 | UNION        | 7,162.62                      | 52.63        | 6,406.25  | 47.07        | 41.75                        | 0.31         | 12,299.70  | 13,610.61  | 14,962.10  |
| PENNSYLVANIA   | 42127 | WAYNE        | -                             | -            | 287.52    | 100.00       | -                            | -            | 238.45     | 287.52     | 340.19     |
| PENNSYLVANIA   | 42131 | WYOMING      | -                             | -            | 4,607.48  | 99.69        | 14.34                        | 0.31         | 3,435.65   | 4,621.82   | 5,857.62   |
| PENNSYLVANIA   | 42133 | YORK         | 162,010.22                    | 82.40        | 34,521.76 | 17.55        | 83.07                        | 0.04         | 179,054.59 | 196,655.94 | 214,988.72 |
| VIRGINIA   | 51001 | ACCOMACK     | -                             | -            | 2,258.34  | 99.58        | 9.42                         | 0.42         | 1,751.03   | 2,267.76   | 2,966.10   |
| VIRGINIA   | 51003 | ALBEMARLE    | 19,922.15                     | 35.64        | 3,333.55  | 14.33        | 8.10                         | 0.03         | 19,391.17  | 23,263.82  | 27,546.82  |
| VIRGINIA   | 51005 | ALLEGHANY    | -                             | -            | 4,840.87  | 100.00       | -                            | -            | 3,567.27   | 4,840.87   | 6,135.79   |
| VIRGINIA   | 51007 | AMELIA       | -                             | -            | 641.47    | 98.81        | 7.72                         | 1.19         | 295.92     | 649.19     | 1,088.74   |
| VIRGINIA   | 51009 | AMHERST      | 2,332.27                      | 55.49        | 1,868.36  | 44.45        | 2.33                         | 0.06         | 2,319.88   | 4,202.97   | 6,149.45   |
| VIRGINIA   | 51011 | APPOMATTOX   | -                             | -            | 502.14    | 99.05        | 4.82                         | 0.95         | 306.58     | 506.96     | 770.50     |
| VIRGINIA   | 51013 | ARLINGTON    | 165,325.33                    | 100.00       | -         | -            | -                            | -            | 163,536.75 | 165,325.33 | 167,114.12 |
| VIRGINIA   | 51015 | AUGUSTA      | 7,959.46                      | 61.36        | 4,971.90  | 38.33        | 39.88                        | 0.31         | 9,101.49   | 12,971.25  | 17,172.63  |
| VIRGINIA   | 51017 | BATH         | -                             | -            | 1,598.25  | 99.89        | 1.82                         | 0.11         | 1,147.27   | 1,600.07   | 2,115.91   |
| VIRGINIA   | 51019 | BEDFORD      | 1,108.56                      | 31.45        | 251.54    | 18.48        | 0.90                         | 0.07         | 745.36     | 1,361.00   | 2,036.44   |
| VIRGINIA   | 51023 | BOTETOURT    | 0.62                          | 0.03         | 1,949.13  | 99.97        | -                            | -            | 882.83     | 1,949.75   | 3,036.89   |
| VIRGINIA   | 51029 | BUCKINGHAM   | -                             | -            | 814.09    | 99.30        | 5.73                         | 0.70         | 318.02     | 819.82     | 1,440.37   |
| VIRGINIA   | 51031 | CAMPBELL     | 1,164.63                      | 76.64        | 354.09    | 23.30        | 0.85                         | 0.06         | 607.57     | 1,519.57   | 2,455.52   |
| VIRGINIA   | 51033 | CAROLINE     | -                             | -            | 2,084.05  | 100.00       | -                            | -            | 910.17     | 2,084.05   | 3,412.40   |
| VIRGINIA   | 51036 | CHARLES CITY | -                             | -            | 52.63     | 100.00       | -                            | -            | -          | 52.63      | 150.48     |
| VIRGINIA   | 51037 | CHARLOTTE    | -                             | -            | 0.17      | 100.00       | -                            | -            | -          | 0.17       | 0.28       |
| VIRGINIA   | 51041 | CHESTERFIELD | 148,681.48                    | 94.95        | 7,907.97  | 5.05         | -                            | -            | 142,166.73 | 156,593.36 | 171,146.63 |
| VIRGINIA   | 51043 | CLARKE       | 2,664.40                      | 81.98        | 579.53    | 17.86        | 5.44                         | 0.17         | 2,451.99   | 3,245.36   | 4,118.90   |
| VIRGINIA   | 51045 | CRAIG        | -                             | -            | 695.25    | 100.00       | -                            | -            | 420.71     | 695.25     | 969.79     |
| VIRGINIA   | 51047 | CULPEPER     | 7,351.21                      | 86.21        | 1,175.02  | 13.78        | 0.79                         | 0.01         | 7,052.59   | 8,527.01   | 10,060.54  |
| VIRGINIA   | 51049 | CUMBERLAND   | 294.27                        | 71.70        | 112.48    | 27.78        | 2.11                         | 0.52         | 176.57     | 404.85     | 721.43     |

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                | 2. Population                 |              |           |              |       |              |                                 |            |            |
|--|-------|----------------|-------------------------------|--------------|-----------|--------------|-------|--------------|---------------------------------|------------|------------|
|  |       |                | a. POPULATION USING SEWER AS: |              |           |              |       |              | TOTAL POPULATION<br>USING SEWER |            |            |
| STATE  | FIPS  | COUNTY         | URBAN                         | % Mean Total | RURAL     | % Mean Total | FARM  | % Mean Total | MIN                             | MEAN       | MAX        |
| VIRGINIA   | 51053 | DINWIDDIE      | 3,304.02                      | 89.60        | 381.53    | 10.35        | 1.98  | 0.05         | 3,292.61                        | 3,687.53   | 4,103.83   |
| VIRGINIA   | 51057 | ESSEX          | -                             | -            | 1,449.73  | 98.95        | 15.45 | 1.05         | 977.47                          | 1,465.18   | 2,008.54   |
| VIRGINIA   | 51059 | FAIRFAX        | 738,578.42                    | 99.39        | 4,531.94  | 0.61         | -     | -            | 723,621.63                      | 743,110.23 | 762,760.69 |
| VIRGINIA   | 51061 | FAUQUIER       | 4,271.97                      | 36.30        | 7,483.30  | 63.59        | 13.20 | 0.11         | 9,271.73                        | 11,768.46  | 14,438.04  |
| VIRGINIA   | 51065 | FLUVANNA       | -                             | -            | 2,538.24  | 99.65        | 9.02  | 0.35         | 2,019.56                        | 2,547.25   | 3,232.13   |
| VIRGINIA   | 51069 | FREDERICK      | -                             | -            | 18,210.43 | 99.55        | 83.23 | 0.45         | 15,469.06                       | 18,293.67  | 21,353.00  |
| VIRGINIA   | 51071 | OILES          | -                             | -            | 8.34      | 100.00       | -     | -            | -                               | 8.34       | 2270       |
| VIRGINIA   | 51073 | GLOUCESTER     | 1,120.61                      | 45.85        | 1,317.91  | 53.93        | 5.38  | 0.22         | 1,131.61                        | 2,443.90   | 3,885.21   |
| VIRGINIA   | 51075 | GOOCHLAND      | -                             | -            | 654.18    | 100.00       | -     | -            | 173.48                          | 654.18     | 1,267.99   |
| VIRGINIA   | 51079 | GREENE         | -                             | -            | 1,257.11  | 99.63        | 4.65  | 0.37         | 517.19                          | 1,261.76   | 2,005.64   |
| VIRGINIA   | 51085 | HANOVER        | 17,266.68                     | 79.28        | 4,512.60  | 20.72        | -     | -            | 17,475.89                       | 21,779.28  | 26,347.80  |
| VIRGINIA   | 51087 | HENRICO        | 190,115.80                    | 99.34        | 1,252.39  | 0.65         | 16.88 | 0.01         | 182,960.81                      | 191,425.05 | 200,100.16 |
| VIRGINIA   | 51091 | HIGHLAND       | -                             | -            | 325.99    | 98.85        | 3.79  | 1.15         | 117.09                          | 329.77     | 58737      |
| VIRGINIA   | 51093 | ISLE OF WIGHT  | 4,010.37                      | 79.86        | 1,021.65  | 20.14        | -     | -            | 4,269.61                        | 5,072.03   | 5,964.72   |
| VIRGINIA   | 51095 | JAMES CITY     | 14,479.71                     | 62.45        | 8,646.77  | 37.29        | 59.44 | 0.26         | 20,911.14                       | 23,185.90  | 25,446.02  |
| VIRGINIA   | 51097 | KING AND QUEEN | -                             | -            | 24.93     | 98.10        | 0.48  | 1.90         | -                               | 25.42      | 94.94      |
| VIRGINIA   | 51099 | KING GEORGE    | -                             | -            | 3,285.02  | 100.00       | -     | -            | 2,428.32                        | 3,285.02   | 4,226.66   |
| VIRGINIA   | 51101 | KING WILLIAM   | 2,693.57                      | 95.25        | 129.65    | 4.74         | 0.17  | 0.01         | 2,417.08                        | 2,733.39   | 3,086.39   |
| VIRGINIA   | 51103 | LANCASTER      | -                             | -            | 1,148.11  | 99.28        | 8.33  | 0.72         | 462.35                          | 1,156.44   | 2,002.95   |
| VIRGINIA   | 51107 | LOUDOUN        | 57,795.42                     | 91.29        | 5,480.79  | 8.67         | 27.97 | 0.04         | 60,132.34                       | 63,214.17  | 66,493.21  |
| VIRGINIA   | 51109 | LOUISA         | -                             | -            | 1,331.48  | 99.36        | 8.58  | 0.64         | 478.01                          | 1,340.06   | 2,307.62   |
| VIRGINIA   | 51111 | LUNENBERG      | -                             | -            | 0.03      | 100.00       | -     | -            | 0.00                            | 0.03       | 0.10       |
| VIRGINIA   | 51113 | MADISON        | -                             | -            | 391.03    | 99.95        | 0.20  | 0.05         | 196.18                          | 391.23     | 692.92     |
| VIRGINIA   | 51115 | MATHEWS        | -                             | -            | 376.30    | 99.57        | 1.63  | 0.43         | 111.93                          | 377.93     | 662.26     |
| VIRGINIA   | 51119 | MIDDLESEX      | -                             | -            | 726.43    | 99.88        | 0.87  | 0.12         | 476.73                          | 727.30     | 1,122.15   |
| VIRGINIA   | 51121 | MONTGOMERY     | -                             | -            | 51.15     | 100.00       | -     | -            | 13.22                           | 51.15      | 89.08      |
| VIRGINIA   | 51123 | NELSON         | -                             | -            | 1,023.21  | 99.91        | 0.92  | 0.09         | 578.41                          | 1,024.13   | 1,620.09   |
| VIRGINIA   | 51127 | NEW KENT       | -                             | -            | 110.26    | 100.00       | -     | -            | -                               | 110.26     | 332.80     |

Table 6

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                  | 2. Population                 |              |           |              |       |              |                                 |            |            |
|--|-------|------------------|-------------------------------|--------------|-----------|--------------|-------|--------------|---------------------------------|------------|------------|
|  |       |                  | a. POPULATION USING SEWER AS: |              |           |              |       |              | TOTAL POPULATION<br>USING SEWER |            |            |
| STATE  | FIPS  | COUNTY           | URBAN                         | % Mean Total | RURAL     | % Mean Total | FARM  | % Mean Total | MIN                             | MEAN       | MAX        |
| VIRGINIA   | 51131 | NORTHAMPTON      | -                             | -            | 1,687.67  | 98.89        | 18.93 | 1.11         | 1,384.43                        | 1,706.59   | 2,120.92   |
| VIRGINIA   | 51133 | NORTHERMBERLAND  | -                             | -            | 608.78    | 98.94        | 6.51  | 1.06         | 107.85                          | 615.29     | 1,271.27   |
| VIRGINIA   | 51135 | NOTTOWAY         | 944.55                        | 31.27        | 2,064.28  | 68.35        | 11.49 | 0.38         | 2,413.16                        | 3,020.32   | 3,649.45   |
| VIRGINIA   | 51137 | ORANGE           | 2,329.75                      | 31.38        | 5,086.45  | 68.52        | 7.04  | 0.09         | 6,436.76                        | 7,423.24   | 8,445.85   |
| VIRGINIA   | 51139 | PAGE             | 4,018.29                      | 49.98        | 3,998.18  | 49.73        | 23.23 | 0.29         | 6,508.76                        | 8,039.69   | 9,641.30   |
| VIRGINIA   | 51141 | POWHIATAN        | -                             | -            | 179.27    | 100.00       | -     | -            | -                               | 179.27     | 451.32     |
| VIRGINIA   | 51147 | PRINCE EDWARD    | 3,218.79                      | 90.59        | 331.79    | 9.34         | 238   | 0.07         | 2,815.82                        | 3,552.76   | 4,405.90   |
| VIRGINIA   | 51149 | PRINCE GEORGE    | 5,600.33                      | 70.54        | 2,333.33  | 29.39        | 533   | 0.07         | 7,354.56                        | 7,938.98   | 8,546.06   |
| VIRGINIA   | 51153 | PRINCE WILLIAM   | 148,120.88                    | 95.93        | 7,126.54  | 4.87         | 13.09 | 0.01         | 169,257.50                      | 175,260.39 | 181,467.56 |
| VIRGINIA   | 51157 | RAPPAHANNOCK     | -                             | -            | 394.69    | 99.92        | 0.33  | 0.08         | 129.89                          | 395.01     | 729.17     |
| VIRGINIA   | 51159 | RICHMOND         | -                             | -            | 754.04    | 97.16        | 22.06 | 2.84         | 406.57                          | 776.10     | 1,233.24   |
| VIRGINIA   | 51161 | ROANOKE          | -                             | -            | 11.02     | 100.00       | -     | -            | -                               | 11.02      | 35.42      |
| VIRGINIA   | 51163 | ROCKERIDGE       | -                             | -            | 2,925.23  | 99.68        | 9.47  | 0.32         | 1,904.42                        | 2,934.71   | 4,156.10   |
| VIRGINIA   | 51165 | ROCKINGHAM       | 2,930.72                      | 20.80        | 11,080.63 | 78.64        | 79.44 | 0.56         | 10,401.90                       | 14,090.80  | 18,023.51  |
| VIRGINIA   | 51171 | SHENANDOAH       | 6,093.62                      | 50.54        | 5,936.81  | 49.24        | 27.10 | 0.22         | 9,386.21                        | 12,057.53  | 14,185.63  |
| VIRGINIA   | 51177 | SPOTSYLVANIA     | 25,010.39                     | 80.76        | 5,956.68  | 19.24        | -     | -            | 27,786.26                       | 30,967.10  | 34,266.43  |
| VIRGINIA   | 51179 | STAFFORD         | 17,154.06                     | 51.63        | 16,068.51 | 48.37        | -     | -            | 29,398.92                       | 33,222.55  | 37,188.23  |
| VIRGINIA   | 51181 | SURRY            | -                             | -            | 436.33    | 99.15        | 3.74  | 0.85         | 164.01                          | 440.07     | 721.70     |
| VIRGINIA   | 51187 | WARREN           | 10,757.12                     | 96.64        | 374.07    | 3.36         | 0.33  | 0.00         | 10,019.01                       | 11,131.51  | 12,393.85  |
| VIRGINIA   | 51193 | WESTMORELAND     | 2,786.96                      | 85.82        | 458.04    | 14.11        | 2.33  | 0.07         | 2,599.81                        | 3,247.33   | 4,115.29   |
| VIRGINIA   | 51199 | YORK             | 22,437.77                     | 86.61        | 3,442.61  | 13.29        | 25.34 | 0.10         | 22,863.22                       | 25,905.72  | 28,973.55  |
| VIRGINIA   | 51510 | ALEXANDRIA       | 108,569.70                    | 100.00       | -         | -            | -     | -            | 108,095.50                      | 108,569.70 | 109,443.80 |
| VIRGINIA   | 51530 | BUENA VISTA      | 4,942.50                      | 100.00       | -         | -            | -     | -            | 4,614.44                        | 4,942.50   | 5,270.57   |
| VIRGINIA   | 51540 | CHARLOTTESVILLE  | 35,317.82                     | 100.00       | -         | -            | -     | -            | 31,292.82                       | 36,317.82  | 37,342.83  |
| VIRGINIA   | 51550 | CHESAPEAKE CITY  | 117,252.47                    | 100.00       | 0.71      | 0.00         | -     | -            | 112,439.00                      | 117,253.24 | 122,080.79 |
| VIRGINIA   | 51560 | CLIFTON FORGE    | 1,626.35                      | 100.00       | -         | -            | -     | -            | 1,594.91                        | 1,626.35   | 1,658.19   |
| VIRGINIA   | 51570 | COLONIAL HEIGHTS | 11,816.54                     | 100.00       | -         | -            | -     | -            | 11,706.40                       | 11,816.54  | 11,916.67  |
| VIRGINIA   | 51580 | COVINGTON        | 1,876.38                      | 100.00       | -         | -            | -     | -            | 1,803.63                        | 1,876.38   | 1,947.13   |

Table 6

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                    | 2. Population                 |              |           |              |       |                                 |            |            |            |
|--|-------|--------------------|-------------------------------|--------------|-----------|--------------|-------|---------------------------------|------------|------------|------------|
|  |       |                    | a. POPULATION USING SEWER AS: |              |           |              |       | TOTAL POPULATION<br>USING SEWER |            |            |            |
| STATE  | FIPS  | COUNTY             | URBAN                         | % Mean Total | RURAL     | % Mean Total | FARM  | % Mean Total                    | MIN        | MEAN       | MAX        |
| VIRGINIA   | 51600 | FAIRFAX            | 17,159.65                     | 100.00       | .         | .            | .     | .                               | 17,569.37  | 17,859.65  | 18,149.69  |
| VIRGINIA   | 51610 | FALLS CHURCH       | 9,454.50                      | 100.00       | .         | .            | .     | .                               | 9,316.02   | 9,454.50   | 9,572.98   |
| VIRGINIA   | 51630 | FREDERICKSBURG     | 16,483.71                     | 100.00       | .         | .            | .     | .                               | 16,154.49  | 16,483.71  | 16,812.89  |
| VIRGINIA   | 51650 | HAMPTON CITY       | 125,431.80                    | 100.00       | .         | .            | .     | .                               | 122,713.03 | 125,431.80 | 128,130.46 |
| VIRGINIA   | 51660 | HARRISONBURG       | 22,592.45                     | 100.00       | .         | .            | .     | .                               | 21,705.61  | 22,592.45  | 23,479.34  |
| VIRGINIA   | 51670 | HOPEWELL           | 22,253.40                     | 100.00       | .         | .            | .     | .                               | 21,517.35  | 22,253.40  | 22,949.45  |
| VIRGINIA   | 51678 | LEXINGTON          | 3,872.21                      | 100.00       | .         | .            | .     | .                               | 3,826.72   | 3,872.21   | 3,917.70   |
| VIRGINIA   | 51680 | LYNCHBURG          | 49,128.16                     | 100.00       | .         | .            | .     | .                               | 45,767.47  | 49,128.16  | 52,516.54  |
| VIRGINIA   | 51683 | MANASSES CITY      | 26,281.88                     | 100.00       | .         | .            | .     | .                               | 25,814.73  | 26,281.88  | 26,679.03  |
| VIRGINIA   | 51685 | MANASSES PARK CIT  | 6,734.00                      | 100.00       | .         | .            | .     | .                               | 6,734.00   | 6,734.00   | 6,734.00   |
| VIRGINIA   | 51700 | NEWPORT NEWS CIT   | 160,612.32                    | 100.00       | .         | .            | .     | .                               | 156,751.14 | 160,682.32 | 164,573.37 |
| VIRGINIA   | 51710 | NORFOLK CITY       | 225,110.70                    | 100.00       | .         | .            | .     | .                               | 220,880.52 | 225,180.70 | 229,508.02 |
| VIRGINIA   | 51730 | PETERSBURG         | 30,545.95                     | 100.00       | .         | .            | .     | .                               | 30,085.22  | 30,565.95  | 31,046.58  |
| VIRGINIA   | 51735 | POQUOSON           | 7,924.20                      | 100.00       | .         | .            | .     | .                               | 6,766.80   | 7,924.20   | 9,081.59   |
| VIRGINIA   | 51740 | PORTSMOUTH CITY    | 100,121.28                    | 100.00       | .         | .            | .     | .                               | 97,940.30  | 100,121.28 | 102,302.22 |
| VIRGINIA   | 51760 | RICHMOND CITY      | 187,110.04                    | 100.00       | .         | .            | .     | .                               | 182,808.84 | 187,180.04 | 191,551.74 |
| VIRGINIA   | 51790 | STAUNTON           | 20,097.73                     | 99.94        | 10.29     | 0.05         | 0.79  | 0.00                            | 19,118.97  | 20,108.81  | 21,103.13  |
| VIRGINIA   | 51800 | SUFFOLK CITY       | 20,719.28                     | 99.06        | 198.15    | 0.94         | .     | .                               | 18,505.33  | 20,977.43  | 23,484.38  |
| VIRGINIA   | 51810 | VIRGINIA BEACH CIT | 240,541.54                    | 100.00       | .         | .            | .     | .                               | 234,716.92 | 240,501.54 | 246,325.46 |
| VIRGINIA   | 51820 | WAYNESBORO         | 15,531.83                     | 100.00       | .         | .            | .     | .                               | 14,577.30  | 15,531.83  | 16,499.04  |
| VIRGINIA   | 51830 | WILLIAMSBURG       | 6,932.91                      | 100.00       | .         | .            | .     | .                               | 6,522.98   | 6,932.91   | 7,342.83   |
| VIRGINIA   | 51840 | WINCHESTER         | 19,111.01                     | 100.00       | .         | .            | .     | .                               | 18,403.51  | 19,111.01  | 19,818.50  |
| WEST VIRGINIA  | 54003 | BERKELEY           | 13,910.44                     | 57.65        | 10,214.83 | 42.33        | 5.25  | 0.02                            | 20,377.95  | 24,130.32  | 28,159.78  |
| WEST VIRGINIA  | 54023 | GRANT              | -                             | -            | 2,953.55  | 99.82        | 5.45  | 0.18                            | 2,326.40   | 2,959.00   | 3,703.55   |
| WEST VIRGINIA  | 54025 | GREENBRIAR         | 1.29                          | 69.92        | 0.55      | 30.02        | 0.00  | 0.05                            | 1.24       | 1.84       | 2.45       |
| WEST VIRGINIA  | 54027 | HAMPSHIRE          | -                             | -            | 2,367.23  | 99.32        | 16.26 | 0.68                            | 1,729.02   | 2,383.50   | 3,187.81   |
| WEST VIRGINIA  | 54031 | HARDY              | -                             | -            | 2,873.25  | 99.68        | 9.14  | 0.32                            | 2,235.91   | 2,882.40   | 3,603.26   |
| WEST VIRGINIA  | 54037 | JEFFERSON          | 5,614.53                      | 43.25        | 7,358.91  | 56.69        | 8.16  | 0.06                            | 10,819.70  | 12,081.58  | 15,368.35  |

Table 6

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

|               |       |            | 2. Population                 |              |            |              |          |              |                              |               |               |
|---------------|-------|------------|-------------------------------|--------------|------------|--------------|----------|--------------|------------------------------|---------------|---------------|
|               |       |            | a. POPULATION USING SEWER AS: |              |            |              |          |              | TOTAL POPULATION USING SEWER |               |               |
| STATE         | FIPS  | COUNTY     | URBAN                         | % Mean Total | RURAL      | % Mean Total | FARM     | % Mean Total | MIN                          | MEAN          | MAX           |
| WEST VIRGINIA | 54057 | MINERAL    | 6,958.22                      | 53.93        | 5,937.02   | 46.02        | 6.22     | 0.05         | 10,645.92                    | 12,901.46     | 15,201.59     |
| WEST VIRGINIA | 54063 | MONROE     | .                             | .            | 42.96      | 97.89        | 0.93     | 2.11         | -                            | 43.19         | 106.17        |
| WEST VIRGINIA | 54065 | MORGAN     | .                             | .            | 2,736.02   | 99.38        | 11.63    | 0.42         | 2,083.60                     | 2,747.65      | 3,343.53      |
| WEST VIRGINIA | 54071 | PENDLETON  | .                             | .            | 1,054.64   | 98.65        | 14.38    | 1.35         | 709.71                       | 1,069.02      | 1,519.37      |
| WEST VIRGINIA | 54075 | POCAHONTAS | .                             | .            | 0.46       | 97.43        | 0.01     | 2.78         | 0.18                         | 0.47          | 0.79          |
| WEST VIRGINIA | 54077 | PRESTON    | .                             | .            | 0.55       | 99.45        | 0.00     | 0.36         | .                            | 0.56          | 2.11          |
| WEST VIRGINIA | 54083 | RANDOLPH   | .                             | .            | 0.02       | 96.00        | 0.00     | 4.00         | .                            | 0.00          | 0.07          |
| WEST VIRGINIA | 54093 | TUCKER     | .                             | .            | 25.71      | 99.99        | 0.00     | 0.01         | 21.47                        | 25.71         | 29.99         |
| Grand Total   |       |            | 9,181,017.78                  | 91.72        | 825,592.04 | 8.28         | 3,150.69 | 0.03         | 9,511,967.66                 | 10,014,162.30 | 10,540,217.75 |

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                 | b. POPULATION USING SEPTIC AS |              |           |              |          |              | TOTAL POPULATION<br>USING SEPTIC |            |            |
|--|-------|-----------------|-------------------------------|--------------|-----------|--------------|----------|--------------|----------------------------------|------------|------------|
| STATE  | FIPS  | COUNTY          | URBAN                         |              | RURAL     |              | FARM     |              | MIN                              | MEAN       | MAX        |
|  |       |                 |                               | % Mean Total |           | % Mean Total |          | % Mean Total |                                  |            |            |
| DELAWARE   | 10001 | KENT            | 641                           | 0.04         | 11,499.79 | 93.84        | 879.96   | 6.12         | 13,541.43                        | 14,386.16  | 15,230.18  |
| DELAWARE   | 10003 | NEW CASTLE      | 496.13                        | 12.85        | 1,215.02  | 83.25        | 150.58   | 3.90         | 3,640.56                         | 3,861.73   | 4,123.51   |
| DELAWARE   | 10005 | SUSSEX          | 1,122.18                      | 1.46         | 29,766.70 | 91.66        | 1,587.69 | 4.89         | 29,192.51                        | 32,476.54  | 35,767.12  |
| DISTRICT OF COLUMBIA   | 11001 | WASHINGTON      | 1,416.60                      | 100.00       | -         | -            | -        | -            | -                                | 1,416.60   | 4,244.32   |
| MARYLAND   | 24001 | ALLEGANY        | 2,128.40                      | 17.32        | 9,936.66  | 80.85        | 225.56   | 1.84         | 7,816.12                         | 12,290.63  | 17,057.19  |
| MARYLAND   | 24003 | ANNE ARUNDEL    | 71,202.88                     | 66.05        | 35,355.68 | 32.80        | 1,233.80 | 1.14         | 90,172.64                        | 107,801.05 | 126,703.24 |
| MARYLAND   | 24005 | BALTIMORE       | 30,869.99                     | 33.73        | 33,811.35 | 62.28        | 1,719.77 | 1.99         | 71,345.46                        | 86,401.17  | 104,225.69 |
| MARYLAND   | 24009 | CALVERT         | 5,213.15                      | 11.83        | 37,892.68 | 86.01        | 949.31   | 2.15         | 40,915.00                        | 44,055.18  | 47,206.39  |
| MARYLAND   | 24011 | CAROLINE        | 300.61                        | 1.70         | 11,447.59 | 87.31        | 1,943.73 | 10.99        | 15,342.68                        | 17,691.95  | 20,057.17  |
| MARYLAND   | 24013 | CARROLL         | 5,040.70                      | 4.50         | 69,538.83 | 89.73        | 2,922.40 | 3.77         | 69,918.29                        | 77,301.94  | 85,162.44  |
| MARYLAND   | 24015 | CECIL           | 1,048.86                      | 2.60         | 37,827.07 | 93.87        | 1,420.32 | 3.52         | 34,721.55                        | 40,296.28  | 45,942.14  |
| MARYLAND   | 24017 | CHARLES         | 6,721.04                      | 17.02        | 31,535.00 | 79.87        | 1,228.01 | 3.11         | 33,746.87                        | 39,484.03  | 45,474.00  |
| MARYLAND   | 24019 | DORCHESTER      | 60.18                         | 0.46         | 12,412.12 | 93.97        | 735.90   | 5.57         | 11,110.61                        | 13,208.21  | 15,317.90  |
| MARYLAND   | 24021 | FREDERICK       | 18,793.14                     | 27.15        | 47,509.60 | 68.62        | 2,929.02 | 4.23         | 60,438.66                        | 69,231.80  | 78,381.68  |
| MARYLAND   | 24023 | GARRETT         | -                             | -            | 1,824.01  | 93.21        | 278.37   | 6.79         | 3,603.70                         | 4,102.39   | 4,601.07   |
| MARYLAND   | 24025 | HARFORD         | 20,856.34                     | 29.43        | 48,920.92 | 69.02        | 1,101.38 | 1.55         | 62,538.07                        | 70,878.61  | 79,597.52  |
| MARYLAND   | 24027 | HOWARD          | 7,129.09                      | 20.69        | 25,453.09 | 76.79        | 866.87   | 2.52         | 28,292.78                        | 34,448.99  | 41,388.92  |
| MARYLAND   | 24029 | KENT            | 335.64                        | 3.83         | 7,358.03  | 84.04        | 1,061.71 | 12.13        | 8,617.47                         | 8,755.38   | 10,860.18  |
| MARYLAND   | 24031 | MONTGOMERY      | 20,533.73                     | 41.68        | 27,650.64 | 56.13        | 1,072.62 | 2.18         | 36,710.81                        | 49,260.17  | 63,383.55  |
| MARYLAND   | 24033 | PRINCE GEORGE'S | 15,532.34                     | 59.97        | 9,739.19  | 37.60        | 601.29   | 2.32         | 13,749.75                        | 25,900.25  | 40,303.77  |
| MARYLAND   | 24035 | QUEEN ANNE'S    | -                             | -            | 22,314.86 | 95.30        | 1,101.60 | 4.70         | 20,707.86                        | 23,416.45  | 26,147.53  |
| MARYLAND   | 24037 | SANT MARY'S     | 7,652.72                      | 15.31        | 40,490.96 | 81.00        | 1,847.80 | 3.70         | 44,613.15                        | 49,991.48  | 55,475.90  |
| MARYLAND   | 24039 | SOMERSET        | 48.70                         | 0.43         | 10,808.22 | 92.80        | 788.31   | 6.77         | 9,971.79                         | 11,646.23  | 13,393.63  |
| MARYLAND   | 24041 | TALBOT          | 541.72                        | 3.40         | 14,442.54 | 89.57        | 1,133.79 | 7.03         | 14,095.59                        | 16,124.05  | 18,377.95  |
| MARYLAND   | 24043 | WASHINGTON      | 9,581.06                      | 20.38        | 36,037.38 | 76.61        | 1,417.42 | 3.01         | 40,219.29                        | 47,041.80  | 54,009.61  |
| MARYLAND   | 24045 | WICOMICO        | 561.54                        | 1.49         | 36,009.74 | 94.08        | 1,675.60 | 4.38         | 33,676.53                        | 38,276.15  | 43,093.04  |
| MARYLAND   | 24047 | WORCESTER       | 134.72                        | 1.97         | 6,292.44  | 90.45        | 527.38   | 7.58         | 5,913.91                         | 6,956.54   | 7,974.72   |
| MARYLAND   | 24510 | BALTIMORE CITY  | 5,382.41                      | 100.00       | -         | -            | -        | -            | 98.79                            | 5,382.41   | 13,109.07  |
| NEW YCRK   | 36003 | ALLEGANY        | 815.62                        | 12.65        | 2,124.27  | 84.04        | 83.70    | 3.31         | 2,219.57                         | 2,527.39   | 2,825.61   |

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCR-CHESAPEAKE, Inc.

| STATE        | FIPS  | COUNTY      | b. POPULATION USING SEPTIC AS: |              |           |              |          |              | TOTAL POPULATION USING SEPTIC |           |           |
|--------------|-------|-------------|--------------------------------|--------------|-----------|--------------|----------|--------------|-------------------------------|-----------|-----------|
|              |       |             | URBAN                          | % Mean Total | RURAL     | % Mean Total | FARM     | % Mean Total | MIN                           | MEAN      | MAX       |
| NEW YORK     | 36007 | BROOME      | 13,388.96                      | 20.87        | 50,044.49 | 78.01        | 714.11   | 1.11         | 55,713.37                     | 64,147.41 | 73,240.91 |
| NEW YORK     | 36011 | CAYUGA      | -                              | -            | 45.77     | 92.46        | 3.73     | 7.54         | 47.76                         | 49.50     | 51.24     |
| NEW YORK     | 36015 | CHEMUNG     | 11,972.93                      | 36.84        | 20,178.25 | 62.05        | 348.60   | 1.07         | 28,451.62                     | 32,499.83 | 36,561.04 |
| NEW YORK     | 36017 | CHENANGO    | 102.02                         | 0.28         | 34,151.82 | 94.93        | 1,722.66 | 4.79         | 31,920.64                     | 35,976.55 | 40,145.67 |
| NEW YORK     | 36023 | CORTLAND    | 1,042.58                       | 5.35         | 17,386.67 | 89.23        | 1,056.36 | 5.42         | 16,889.14                     | 19,485.61 | 22,286.65 |
| NEW YORK     | 36025 | DELAWARE    | 64.48                          | 0.71         | 8,442.25  | 93.25        | 546.95   | 6.04         | 8,375.81                      | 9,053.69  | 9,799.79  |
| NEW YORK     | 36043 | HERKIMER    | -                              | -            | 3,821.49  | 92.07        | 329.18   | 7.93         | 3,974.06                      | 4,150.67  | 4,327.27  |
| NEW YORK     | 36051 | LIVINGSTON  | -                              | -            | 352.11    | 97.82        | 7.83     | 2.18         | 342.78                        | 359.95    | 377.11    |
| NEW YORK     | 36053 | MADISON     | 1,163.58                       | 11.64        | 10,281.57 | 81.75        | 831.11   | 6.61         | 11,634.71                     | 12,576.27 | 13,528.86 |
| NEW YORK     | 36065 | ONEIDA EAST | 16.13                          | 0.69         | 2,196.49  | 93.90        | 126.47   | 5.41         | 2,143.45                      | 2,339.05  | 2,514.73  |
| NEW YORK     | 36067 | ONONDAGA    | -                              | -            | 1,987.75  | 93.99        | 127.67   | 6.01         | 1,864.22                      | 2,114.82  | 2,365.42  |
| NEW YORK     | 36069 | ONTARIO     | -                              | -            | 111.22    | 97.38        | 2.59     | 2.62         | 109.82                        | 114.21    | 118.61    |
| NEW YORK     | 36077 | OTSEGO      | 158.94                         | 0.41         | 36,358.84 | 94.41        | 1,992.14 | 5.17         | 34,903.10                     | 38,509.84 | 42,281.82 |
| NEW YORK     | 36095 | SCHOHARIE   | -                              | -            | 969.69    | 96.08        | 39.61    | 3.92         | 915.71                        | 1,009.29  | 1,102.88  |
| NEW YORK     | 36097 | SCHUYLER    | -                              | -            | 3,802.48  | 96.85        | 123.78   | 3.15         | 3,640.32                      | 3,926.27  | 4,212.21  |
| NEW YORK     | 36101 | STEUBEN     | 480.29                         | 1.06         | 42,623.43 | 93.73        | 2,369.78 | 5.21         | 39,760.06                     | 45,473.49 | 51,453.71 |
| NEW YORK     | 36107 | TIOGA       | 1,724.46                       | 5.10         | 30,908.74 | 91.35        | 1,204.13 | 3.56         | 30,672.68                     | 33,837.37 | 37,163.98 |
| NEW YORK     | 36109 | TOMPKINS    | -                              | -            | 4,858.43  | 96.88        | 156.23   | 3.12         | 4,671.36                      | 5,014.65  | 5,357.94  |
| NEW YORK     | 36123 | YATES       | -                              | -            | 222.89    | 92.27        | 18.68    | 7.73         | 222.08                        | 241.56    | 261.05    |
| PENNSYLVANIA | 42001 | ADAMS       | 18.31                          | 0.12         | 37,494.76 | 93.21        | 2,681.01 | 6.67         | 36,068.75                     | 40,224.12 | 44,431.69 |
| PENNSYLVANIA | 42009 | BEDFORD     | -                              | -            | 34,106.17 | 94.56        | 1,963.21 | 5.44         | 33,722.81                     | 36,069.39 | 38,439.53 |
| PENNSYLVANIA | 42011 | BERKS       | 1.96                           | 0.02         | 9,962.62  | 91.72        | 855.25   | 7.87         | 10,228.12                     | 10,862.32 | 11,496.54 |
| PENNSYLVANIA | 42013 | BLAIR       | 5,649.81                       | 15.60        | 29,214.98 | 81.23        | 1,141.36 | 3.17         | 29,570.43                     | 35,966.23 | 43,231.40 |
| PENNSYLVANIA | 42015 | BRADFORD    | 1,009.80                       | 2.53         | 36,411.30 | 91.31        | 2,449.86 | 6.14         | 36,924.29                     | 39,874.93 | 42,934.10 |
| PENNSYLVANIA | 42021 | CAMBRIA     | -                              | -            | 14,062.43 | 97.31        | 388.88   | 2.69         | 13,978.21                     | 14,451.32 | 15,855.82 |
| PENNSYLVANIA | 42023 | CAMERON     | 12.83                          | 0.51         | 2,483.85  | 99.29        | 4.94     | 0.20         | 2,107.24                      | 2,501.62  | 2,918.09  |
| PENNSYLVANIA | 42025 | CARBON      | -                              | -            | 1.18      | 97.92        | 0.03     | 2.08         | 1.16                          | 1.20      | 1.25      |
| PENNSYLVANIA | 42027 | CENTRE      | 1,058.22                       | 3.06         | 12,905.26 | 91.70        | 1,878.35 | 5.23         | 30,900.88                     | 35,881.86 | 41,225.83 |
| PENNSYLVANIA | 42029 | CHESTER     | 124.21                         | 0.62         | 18,445.73 | 92.43        | 1,386.73 | 6.95         | 19,022.33                     | 19,956.67 | 20,944.01 |

Table 6

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                | b. POPULATION USING SEPTIC AS: |              |            |              |           |              | TOTAL POPULATION<br>USING SEPTIC |            |            |
|--|-------|----------------|--------------------------------|--------------|------------|--------------|-----------|--------------|----------------------------------|------------|------------|
| STATE  | FIPS  | COUNTY         | URBAN                          | % Mean Total | RURAL      | % Mean Total | FARM      | % Mean Total | MIN                              | MEAN       | MAX        |
| PENNSYLVANIA   | 42033 | CLEARFIELD     | 31345                          | 0.87         | 35,076.11  | 97.70        | 512.48    | 1.43         | 32,554.24                        | 35,902.03  | 39,360.24  |
| PENNSYLVANIA   | 42035 | CLINTON        | 1838                           | 0.15         | 11,579.73  | 94.64        | 637.49    | 5.21         | 10,456.13                        | 12,235.61  | 14,013.14  |
| PENNSYLVANIA   | 42037 | COLUMBIA       | 65203                          | 1.87         | 32,401.14  | 93.01        | 1,784.76  | 5.12         | 32,634.30                        | 34,837.93  | 37,293.96  |
| PENNSYLVANIA   | 42041 | CUMBERLAND     | 5,830.13                       | 11.01        | 44,619.83  | 84.28        | 2,493.00  | 4.71         | 44,878.95                        | 52,943.82  | 61,579.16  |
| PENNSYLVANIA   | 42043 | DAUPHIN        | 7,851.09                       | 15.67        | 40,533.67  | 80.92        | 1,702.20  | 3.40         | 41,639.57                        | 50,092.52  | 59,584.09  |
| PENNSYLVANIA   | 42047 | ELK            | .                              | .            | 4,751.31   | 99.90        | 4.67      | 0.10         | 4,191.10                         | 4,755.97   | 5,323.11   |
| PENNSYLVANIA   | 42055 | FRANKLIN       | 62952                          | 1.35         | 42,087.68  | 90.05        | 4,023.40  | 8.61         | 39,068.70                        | 46,740.57  | 54,692.12  |
| PENNSYLVANIA   | 42057 | FULTON         | .                              | .            | 10,340.25  | 93.29        | 743.80    | 6.71         | 10,583.66                        | 11,084.05  | 11,598.12  |
| PENNSYLVANIA   | 42061 | HUNTINGDON     | .                              | .            | 23,938.45  | 95.30        | 1,179.24  | 4.69         | 23,495.94                        | 25,117.80  | 26,788.67  |
| PENNSYLVANIA   | 42063 | INDIANA        | .                              | .            | 2,843.09   | 97.40        | 75.92     | 2.60         | 2,701.44                         | 2,919.01   | 3,136.18   |
| PENNSYLVANIA   | 42065 | JEFFERSON      | .                              | .            | 2.83       | 89.70        | 0.33      | 10.30        | 2.97                             | 3.15       | 3.54       |
| PENNSYLVANIA   | 42067 | JUNIATA        | .                              | .            | 14,049.26  | 93.04        | 1,050.48  | 6.96         | 13,979.74                        | 15,099.75  | 16,225.40  |
| PENNSYLVANIA   | 42069 | LACKAWANNA     | 2,898.70                       | 11.31        | 22,292.94  | 86.99        | 434.87    | 1.70         | 21,398.98                        | 25,626.54  | 30,917.49  |
| PENNSYLVANIA   | 42071 | LANCASTER      | 8,673.64                       | 6.13         | 116,857.15 | 82.60        | 15,921.75 | 11.25        | 120,094.19                       | 141,467.54 | 164,159.24 |
| PENNSYLVANIA   | 42075 | LEBANON        | 3,264.81                       | 9.37         | 25,832.57  | 85.61        | 1,751.54  | 5.03         | 30,338.64                        | 34,848.89  | 39,555.76  |
| PENNSYLVANIA   | 42079 | LUZERNE        | 11,568.64                      | 19.11        | 48,173.11  | 79.59        | 788.34    | 1.30         | 50,310.19                        | 60,530.23  | 72,218.16  |
| PENNSYLVANIA   | 42081 | LYCOMING       | 7,207.31                       | 13.77        | 43,469.01  | 83.07        | 1,652.58  | 3.16         | 48,100.22                        | 52,328.80  | 56,967.15  |
| PENNSYLVANIA   | 42083 | MCKEAN         | .                              | .            | 188.07     | 98.47        | 2.92      | 1.53         | 181.38                           | 190.99     | 200.60     |
| PENNSYLVANIA   | 42087 | MIFFLIN        | 7766                           | 0.39         | 18,506.16  | 93.19        | 1,274.11  | 6.42         | 16,650.22                        | 19,857.92  | 23,140.93  |
| PENNSYLVANIA   | 42093 | MONTGOMERY     | 11199                          | 1.34         | 7,588.32   | 90.99        | 639.10    | 7.66         | 7,688.75                         | 8,339.41   | 9,034.16   |
| PENNSYLVANIA   | 42097 | NORTHUMBERLAND | 31127                          | 1.07         | 27,315.84  | 93.60        | 1,556.33  | 5.33         | 25,736.92                        | 29,183.63  | 32,961.04  |
| PENNSYLVANIA   | 42099 | PERRY          | 10526                          | 0.37         | 26,788.18  | 93.96        | 1,615.52  | 5.67         | 26,320.99                        | 28,508.99  | 30,778.67  |
| PENNSYLVANIA   | 42105 | POTTER         | .                              | .            | 3,190.52   | 92.73        | 250.19    | 7.27         | 3,077.02                         | 3,440.71   | 3,808.79   |
| PENNSYLVANIA   | 42107 | SCHUYLKILL     | 19168                          | 0.72         | 25,452.50  | 96.22        | 808.96    | 3.06         | 23,575.51                        | 26,453.16  | 29,490.95  |
| PENNSYLVANIA   | 42109 | SNYDER         | 6143                           | 0.33         | 16,798.93  | 90.98        | 1,603.28  | 8.68         | 16,530.53                        | 18,463.60  | 20,443.77  |
| PENNSYLVANIA   | 42111 | SOMERSET       | .                              | .            | 2,228.78   | 89.00        | 275.59    | 11.00        | 2,379.22                         | 2,504.37   | 2,629.52   |
| PENNSYLVANIA   | 42113 | SULLIVAN       | .                              | .            | 4,228.42   | 96.46        | 155.06    | 3.54         | 4,034.16                         | 4,383.48   | 4,738.07   |
| PENNSYLVANIA   | 42115 | SUSQUEHANNA    | .                              | .            | 27,819.51  | 96.27        | 1,078.68  | 3.73         | 27,222.34                        | 28,898.19  | 30,598.51  |
| PENNSYLVANIA   | 42117 | TIOGA          | 23943                          | 0.89         | 24,372.91  | 91.04        | 2,157.93  | 8.06         | 24,951.16                        | 26,770.30  | 28,707.02  |

Table 6

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

| STATE        | FIPS  | COUNTY       | b. POPULATION USING SEPTIC AS: |              |            |              |          |              | TOTAL POPULATION USING SEPTIC |            |            |
|--------------|-------|--------------|--------------------------------|--------------|------------|--------------|----------|--------------|-------------------------------|------------|------------|
|              |       |              | URBAN                          | % Mean Total | RURAL      | % Mean Total | FARM     | % Mean Total | MIN                           | MEAN       | MAX        |
| PENNSYLVANIA | 42119 | UNION        | 57.38                          | 0.34         | 15,247.60  | 91.26        | 1,402.76 | 8.40         | 15,196.31                     | 16,707.72  | 18,299.63  |
| PENNSYLVANIA | 42127 | WAYNE        | -                              | -            | 910.95     | 93.36        | 6271     | 6.44         | 887.14                        | 973.65     | 1,060.18   |
| PENNSYLVANIA | 42131 | WYOMING      | -                              | -            | 21,436.14  | 96.86        | 695.41   | 3.14         | 20,696.34                     | 22,125.55  | 23,559.78  |
| PENNSYLVANIA | 42133 | YORK         | 16,774.52                      | 12.52        | 112,601.86 | 84.02        | 4,641.91 | 3.46         | 114,823.24                    | 134,018.40 | 154,271.80 |
| VIRGINIA     | 51001 | ACCOMACK     | -                              | -            | 11,508.45  | 96.29        | 443.50   | 3.71         | 10,445.28                     | 11,951.95  | 13,499.44  |
| VIRGINIA     | 51003 | ALBEMARLE    | 4,217.41                       | 11.33        | 31,607.25  | 84.92        | 1,395.66 | 3.75         | 32,209.24                     | 37,220.41  | 42,403.02  |
| VIRGINIA     | 51005 | ALLEGHANY    | -                              | -            | 7,197.43   | 96.64        | 249.90   | 3.36         | 5,980.68                      | 7,447.31   | 8,541.96   |
| VIRGINIA     | 51007 | AMELIA       | -                              | -            | 6,743.43   | 91.20        | 650.64   | 8.80         | 6,480.65                      | 7,394.05   | 8,307.47   |
| VIRGINIA     | 51009 | AMHERST      | 8,460.83                       | 40.25        | 12,155.05  | 57.82        | 406.45   | 1.93         | 18,327.40                     | 21,022.31  | 23,717.22  |
| VIRGINIA     | 51011 | APPOMATTOX   | -                              | -            | 6,269.52   | 94.49        | 365.42   | 5.51         | 6,143.71                      | 6,634.91   | 7,135.99   |
| VIRGINIA     | 51013 | ARLINGTON    | 949.93                         | 100.00       | -          | -            | -        | -            | 99.77                         | 949.91     | 2,215.97   |
| VIRGINIA     | 51015 | AUGUSTA      | 3,690.38                       | 9.15         | 31,588.77  | 82.84        | 3,054.40 | 8.01         | 32,728.46                     | 38,133.51  | 43,574.18  |
| VIRGINIA     | 51017 | BATH         | -                              | -            | 2,412.16   | 94.08        | 151.67   | 5.92         | 1,811.38                      | 2,563.81   | 3,316.28   |
| VIRGINIA     | 51019 | BEDFORD      | 3,295.61                       | 45.01        | 3,921.21   | 53.56        | 104.54   | 1.43         | 6,510.73                      | 7,321.45   | 8,132.17   |
| VIRGINIA     | 51023 | BOTETCOURT   | 43.46                          | 0.43         | 9,483.38   | 93.64        | 600.31   | 5.93         | 1,754.03                      | 10,127.15  | 11,300.28  |
| VIRGINIA     | 51029 | BUCKINGHAM   | -                              | -            | 9,362.75   | 95.67        | 423.59   | 4.33         | 1,481.23                      | 9,786.44   | 11,091.65  |
| VIRGINIA     | 51031 | CAMPBELL     | 4,178.81                       | 41.80        | 6,150.39   | 57.41        | 84.45    | 0.79         | 9,695.49                      | 10,713.65  | 11,731.81  |
| VIRGINIA     | 51033 | CAROLINE     | -                              | -            | 15,061.94  | 97.09        | 450.96   | 2.91         | 13,473.06                     | 15,512.91  | 17,552.75  |
| VIRGINIA     | 51036 | CHARLES CITY | -                              | -            | 5,427.26   | 97.98        | 112.00   | 2.02         | 4,962.36                      | 5,539.27   | 6,116.18   |
| VIRGINIA     | 51037 | CHARLOTTE    | -                              | -            | 1.01       | 96.18        | 0.04     | 3.82         | 0.89                          | 1.01       | 1.21       |
| VIRGINIA     | 51041 | CHESTERFIELD | 23,624.58                      | 47.56        | 25,606.86  | 51.55        | 445.69   | 0.90         | 35,612.36                     | 49,677.09  | 64,357.34  |
| VIRGINIA     | 51043 | CLARKE       | 313.69                         | 3.89         | 7,042.83   | 87.36        | 705.71   | 8.75         | 6,908.07                      | 8,062.21   | 9,216.39   |
| VIRGINIA     | 51045 | CRAIG        | -                              | -            | 2,623.93   | 95.09        | 135.51   | 4.91         | 2,443.02                      | 2,759.44   | 3,075.86   |
| VIRGINIA     | 51047 | CULPEPER     | 768.30                         | 4.54         | 15,304.52  | 90.44        | 849.14   | 5.02         | 16,711.26                     | 16,922.14  | 19,179.29  |
| VIRGINIA     | 51049 | CUMBERLAND   | 35.24                          | 0.55         | 5,845.65   | 91.38        | 515.91   | 8.07         | 1,502.26                      | 6,396.86   | 7,291.34   |
| VIRGINIA     | 51053 | DINWIDDIE    | 114.94                         | 3.49         | 2,973.55   | 90.33        | 203.33   | 6.18         | 1,795.47                      | 3,292.01   | 3,810.94   |
| VIRGINIA     | 51057 | ESSEX        | -                              | -            | 6,177.56   | 95.43        | 295.14   | 4.57         | 5,532.18                      | 6,473.40   | 7,414.61   |
| VIRGINIA     | 51059 | FAIRFAX      | 43,162.85                      | 74.33        | 14,953.29  | 25.34        | 196.00   | 0.33         | 41,039.27                     | 59,012.15  | 77,350.03  |
| VIRGINIA     | 51061 | FAUQUER      | 104.62                         | 1.17         | 32,107.29  | 92.56        | 2,177.98 | 6.28         | 31,473.48                     | 34,689.91  | 37,926.92  |

Table 6

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                | b. POPULATION USING SEPTIC AS: |              |           |              |          |              | TOTAL POPULATION<br>USING SEPTIC |           |           |
|--|-------|----------------|--------------------------------|--------------|-----------|--------------|----------|--------------|----------------------------------|-----------|-----------|
| STATE  | FIPS  | COUNTY         | URBAN                          |              | RURAL     |              | FARM     |              | MIN                              | MEAN      | MAX       |
|  |       |                |                                | % Mean Total |           | % Mean Total |          | % Mean Total |                                  |           |           |
| VIRGINIA   | 51065 | FLUVANNA       | -                              | -            | 8,671.25  | 95.68        | 391.44   | 4.32         | 8,031.71                         | 9,062.69  | 11,093.66 |
| VIRGINIA   | 51069 | FREDERICK      | -                              | -            | 24,725.11 | 96.52        | 891.09   | 3.48         | 21,485.04                        | 25,616.92 | 29,790.26 |
| VIRGINIA   | 51071 | GILES          | -                              | -            | 244.13    | 83.79        | 47.37    | 16.21        | 268.14                           | 292.20    | 316.27    |
| VIRGINIA   | 51073 | GLOUCESTER     | 7,659.68                       | 29.37        | 18,071.19 | 69.29        | 310.01   | 1.34         | 23,881.02                        | 26,081.57 | 28,282.11 |
| VIRGINIA   | 51075 | GOOCHLAND      | -                              | -            | 11,013.73 | 94.66        | 621.09   | 5.34         | 10,400.08                        | 11,634.82 | 12,869.56 |
| VIRGINIA   | 51079 | GREENE         | -                              | -            | 8,155.19  | 95.93        | 345.81   | 4.07         | 7,591.97                         | 8,501.70  | 9,411.43  |
| VIRGINIA   | 51085 | HANOVER        | 10,584.03                      | 27.73        | 26,440.04 | 69.27        | 1,146.98 | 3.00         | 32,716.33                        | 38,171.08 | 43,737.75 |
| VIRGINIA   | 51087 | HENRICO        | 8,224.01                       | 35.64        | 14,560.31 | 63.10        | 291.12   | 1.26         | 15,506.24                        | 23,075.64 | 31,977.89 |
| VIRGINIA   | 51091 | HIGHLAND       | -                              | -            | 1,571.79  | 81.58        | 344.82   | 18.42        | 1,492.06                         | 1,926.61  | 2,361.15  |
| VIRGINIA   | 51093 | ISLE OF WIGHT  | 549.69                         | 4.68         | 10,832.05 | 92.20        | 346.19   | 3.12         | 10,633.20                        | 11,747.94 | 12,842.68 |
| VIRGINIA   | 51095 | JAMES CITY     | 1,075.64                       | 10.45        | 9,115.70  | 88.56        | 101.71   | 0.99         | 8,129.42                         | 10,293.05 | 12,542.57 |
| VIRGINIA   | 51097 | KING AND QUEEN | -                              | -            | 5,480.11  | 94.22        | 316.13   | 5.78         | 5,431.62                         | 5,816.44  | 6,201.26  |
| VIRGINIA   | 51099 | KING GEORGE    | -                              | -            | 9,144.02  | 96.04        | 377.17   | 3.96         | 8,367.27                         | 9,321.20  | 10,675.12 |
| VIRGINIA   | 51101 | KING WILLIAM   | 254.89                         | 3.38         | 7,000.12  | 92.94        | 276.89   | 3.68         | 6,780.02                         | 7,532.20  | 8,306.52  |
| VIRGINIA   | 51103 | LANCASTER      | -                              | -            | 8,766.18  | 98.05        | 174.66   | 1.95         | 7,755.18                         | 8,940.85  | 10,126.50 |
| VIRGINIA   | 51107 | LOUDOUN        | 1,386.26                       | 6.48         | 18,003.71 | 84.11        | 2,015.48 | 9.42         | 17,770.05                        | 21,405.43 | 25,204.76 |
| VIRGINIA   | 51109 | LOUISA         | -                              | -            | 16,319.98 | 95.07        | 847.08   | 4.93         | 15,211.97                        | 17,167.06 | 19,122.18 |
| VIRGINIA   | 51111 | LUNENBERG      | -                              | -            | 2.19      | 97.55        | 0.06     | 2.45         | 2.08                             | 2.25      | 2.41      |
| VIRGINIA   | 51113 | MADISON        | -                              | -            | 9,424.71  | 92.31        | 785.06   | 7.69         | 9,422.92                         | 10,209.77 | 10,996.62 |
| VIRGINIA   | 51115 | MATHEWS        | -                              | -            | 7,404.05  | 98.81        | 89.43    | 1.19         | 7,014.09                         | 7,493.48  | 7,972.87  |
| VIRGINIA   | 51119 | MIDDLESEX      | -                              | -            | 7,126.30  | 96.48        | 250.23   | 3.52         | 6,584.57                         | 7,386.33  | 8,188.50  |
| VIRGINIA   | 51121 | MONTGOMERY     | -                              | -            | 431.16    | 91.45        | 40.29    | 8.55         | 422.12                           | 471.45    | 520.78    |
| VIRGINIA   | 51125 | NELSON         | -                              | -            | 9,193.27  | 95.15        | 458.86   | 4.85         | 8,207.91                         | 9,662.13  | 11,136.12 |
| VIRGINIA   | 51127 | NEW KENT       | -                              | -            | 9,593.56  | 96.89        | 338.20   | 3.11         | 9,390.28                         | 9,901.76  | 10,413.24 |
| VIRGINIA   | 51131 | NORTHAMPTON    | -                              | -            | 5,384.41  | 93.97        | 345.35   | 6.03         | 4,871.91                         | 5,729.75  | 6,603.11  |
| VIRGINIA   | 51133 | NORTHUMBERLAND | -                              | -            | 8,781.17  | 95.49        | 414.38   | 4.51         | 8,071.84                         | 9,195.55  | 10,319.24 |
| VIRGINIA   | 51135 | NOTTOWAY       | 10.45                          | 0.26         | 3,724.85  | 91.28        | 345.22   | 8.46         | 3,243.73                         | 4,080.52  | 4,933.06  |
| VIRGINIA   | 51137 | ORANGE         | 95.66                          | 0.74         | 12,129.80 | 94.01        | 677.09   | 5.25         | 11,367.48                        | 12,902.56 | 14,456.65 |
| VIRGINIA   | 51139 | PAGE           | 427.08                         | 3.36         | 11,615.20 | 91.31        | 678.60   | 5.33         | 10,729.68                        | 12,720.88 | 14,802.29 |

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

| STATE    | FIPS  | COUNTY           | b. POPULATION USING SEPTIC AS: |              |           |              |          |              | TOTAL POPULATION USING SEPTIC |           |           |
|----------|-------|------------------|--------------------------------|--------------|-----------|--------------|----------|--------------|-------------------------------|-----------|-----------|
|          |       |                  | URBAN                          | % Mean Total | RURAL     | % Mean Total | FARM     | % Mean Total | MIN                           | MEAN      | MAX       |
|          |       |                  | VIRGINIA                       | 51145        | POWHEATAN | .            | .        | 12,357.96    | 97.43                         | 326.41    | 2.57      |
| VIRGINIA | 51147 | PRINCE EDWARD    | 311.61                         | 3.46         | 8,759.13  | 91.47        | 485.40   | 5.07         | 8,219.66                      | 9,576.12  | 10,932.60 |
| VIRGINIA | 51149 | PRINCE GEORGE    | 609.57                         | 12.88        | 4,026.61  | 85.08        | 96.64    | 2.04         | 4,092.70                      | 4,732.82  | 5,354.57  |
| VIRGINIA | 51153 | PRINCE WILLIAM   | 3,518.11                       | 9.90         | 31,506.58 | 88.36        | 620.59   | 1.74         | 29,955.14                     | 35,655.24 | 42,057.13 |
| VIRGINIA | 51157 | RAPPAHANNOCK     | .                              | .            | 5,229.37  | 93.10        | 387.36   | 6.90         | 4,904.94                      | 5,616.74  | 6,328.52  |
| VIRGINIA | 51159 | RICHMOND         | .                              | .            | 5,121.16  | 93.13        | 377.89   | 6.87         | 4,744.96                      | 5,499.05  | 6,231.15  |
| VIRGINIA | 51161 | ROANOKE          | .                              | .            | 938.49    | 94.41        | 55.53    | 5.59         | 962.42                        | 994.02    | 1,021.62  |
| VIRGINIA | 51163 | ROCKBRIDGE       | .                              | .            | 13,004.86 | 93.98        | 833.10   | 6.02         | 11,156.71                     | 13,837.90 | 15,839.21 |
| VIRGINIA | 51165 | ROCKINGHAM       | 201.91                         | 0.51         | 15,563.59 | 90.07        | 3,718.98 | 9.42         | 34,111.12                     | 39,484.51 | 44,880.84 |
| VIRGINIA | 51171 | SHENANDOAH       | 690.56                         | 3.98         | 15,463.03 | 89.19        | 1,183.50 | 6.83         | 13,161.78                     | 17,337.08 | 20,834.28 |
| VIRGINIA | 51177 | SPOTSYLVANIA     | 1,725.20                       | 6.91         | 22,423.77 | 89.77        | 829.81   | 3.32         | 21,196.37                     | 24,979.78 | 28,782.36 |
| VIRGINIA | 51179 | STAFFORD         | 2,131.01                       | 8.50         | 22,752.00 | 90.50        | 249.11   | 0.59         | 20,907.08                     | 25,139.11 | 29,519.03 |
| VIRGINIA | 51181 | SURRY            | .                              | .            | 2,240.56  | 91.73        | 201.88   | 8.27         | 2,102.12                      | 2,442.44  | 2,782.76  |
| VIRGINIA | 51187 | WARREN           | 885.23                         | 5.32         | 12,895.53 | 92.03        | 232.27   | 1.66         | 12,357.77                     | 14,013.01 | 15,736.09 |
| VIRGINIA | 51193 | WESTMORELAND     | 253.53                         | 2.28         | 10,481.73 | 94.29        | 381.36   | 3.43         | 9,641.48                      | 11,116.61 | 12,625.83 |
| VIRGINIA | 51199 | YORK             | 8,295.11                       | 52.34        | 7,531.10  | 47.52        | 23.62    | 0.15         | 12,913.97                     | 15,849.84 | 18,896.10 |
| VIRGINIA | 51510 | ALEXANDRIA       | 65.29                          | 100.00       | .         | .            | .        | .            | .                             | 65.29     | 270.12    |
| VIRGINIA | 51530 | BUENA VISTA      | 171.98                         | 100.00       | .         | .            | .        | .            | .                             | 171.98    | 459.85    |
| VIRGINIA | 51540 | CHARLOTTESVILLE  | 606.13                         | 100.00       | .         | .            | .        | .            | .                             | 606.13    | 1,378.80  |
| VIRGINIA | 51550 | CHESAPEAKE CITY  | 9,304.76                       | 99.11        | 73.08     | 0.78         | 10.89    | 0.12         | 5,350.75                      | 9,388.72  | 14,056.99 |
| VIRGINIA | 51560 | CLIFTON FORGE    | 10.45                          | 99.99        | .         | .            | .        | .            | .                             | 10.45     | 42.09     |
| VIRGINIA | 51570 | COLONIAL HEIGHTS | 45.46                          | 100.00       | .         | .            | .        | .            | .                             | 45.46     | 155.60    |
| VIRGINIA | 51580 | COVINGTON        | 26.62                          | 100.00       | .         | .            | .        | .            | .                             | 26.62     | 97.37     |
| VIRGINIA | 51600 | FAIRFAX          | 247.58                         | 100.00       | .         | .            | .        | .            | .                             | 247.58    | 532.60    |
| VIRGINIA | 51610 | FALLS CHURCH     | 17.53                          | 100.00       | .         | .            | .        | .            | 19.27                         | 247.58    | 532.60    |
| VIRGINIA | 51630 | FREDERICKSBURG   | 169.26                         | 100.00       | .         | .            | .        | .            | .                             | 17.53     | 58.49     |
| VIRGINIA | 51650 | HAMPTON CITY     | 2,357.29                       | 100.00       | .         | .            | .        | .            | .                             | 169.26    | 464.30    |
| VIRGINIA | 51660 | HARRISONBURG     | 1,093.39                       | 100.00       | .         | .            | .        | .            | 516.97                        | 2,357.29  | 4,755.70  |
| VIRGINIA | 51670 | HOPEWELL         | 299.96                         | 100.00       | .         | .            | .        | .            | 320.57                        | 1,093.39  | 1,925.50  |
|          |       |                  |                                |              |           |              |          |              |                               | 299.96    | 810.80    |

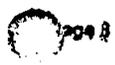
POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc |       |                    | % POPULATION USING SEPTIC AS: |              |           |              | TOTAL POPULATION<br>USING SEPTIC |              |           |           |           |
|---|-------|--------------------|-------------------------------|--------------|-----------|--------------|----------------------------------|--------------|-----------|-----------|-----------|
| STATE   | FIPS  | COUNTY             | URBAN                         | % Mean Total | RURAL     | % Mean Total | FARM                             | % Mean Total | MIN       | MEAN      | MAX       |
| VIRGINIA  | 51678 | LEXINGTON          | 21.79                         | 100.00       | .         | .            | .                                | .            | .         | .         | .         |
| VIRGINIA  | 51680 | LYNCHBURG          | 10,890.90                     | 100.00       | .         | .            | .                                | .            | 7,959.72  | 10,890.90 | 14,181.36 |
| VIRGINIA  | 51683 | MANASSES CITY      | 390.78                        | 100.00       | .         | .            | .                                | .            | 47.92     | 390.78    | 831.52    |
| VIRGINIA  | 51685 | MANASSES PARK CIT  | .                             | .            | .         | .            | .                                | .            | .         | .         | .         |
| VIRGINIA  | 51700 | NEWPORT NEWS CITY  | 4,343.45                      | 100.00       | .         | .            | .                                | .            | 1,354.14  | 4,343.45  | 7,869.15  |
| VIRGINIA  | 51710 | NORFOLK CITY       | 2,106.34                      | 100.00       | .         | .            | .                                | .            | 96.14     | 2,106.34  | 5,465.83  |
| VIRGINIA  | 51730 | PETERSBURG         | 230.62                        | 100.00       | .         | .            | .                                | .            | 15.22     | 230.62    | 587.71    |
| VIRGINIA  | 51735 | POQUOSON           | 2,980.79                      | 100.00       | .         | .            | .                                | .            | 1,879.16  | 2,980.79  | 4,136.75  |
| VIRGINIA  | 51740 | PORTSMOUTH CITY    | 793.74                        | 100.00       | .         | .            | .                                | .            | 24.03     | 793.74    | 2,190.79  |
| VIRGINIA  | 51760 | RICHMOND CITY      | 4,049.18                      | 100.00       | .         | .            | .                                | .            | 1,329.35  | 4,049.18  | 7,466.96  |
| VIRGINIA  | 51790 | STAUNTON           | 662.92                        | 88.63        | 41.67     | 5.57         | 43.21                            | 5.78         | 58.76     | 747.80    | 1,585.19  |
| VIRGINIA  | 51800 | SUFFOLK CITY       | 13,421.18                     | 76.96        | 3,804.26  | 21.81        | 213.84                           | 1.23         | 15,045.16 | 17,439.30 | 19,983.82 |
| VIRGINIA  | 51810 | VIRGINIA BEACH CIT | 11,584.40                     | 100.00       | .         | .            | .                                | .            | 6,873.04  | 11,584.40 | 17,153.50 |
| VIRGINIA  | 51820 | WAYNESBORO         | 1,051.68                      | 100.00       | .         | .            | .                                | .            | 243.61    | 1,051.68  | 1,981.78  |
| VIRGINIA  | 51830 | WILLIAMSBURG       | 270.50                        | 100.00       | .         | .            | .                                | .            | 13.42     | 270.50    | 669.66    |
| VIRGINIA  | 51840 | WINCHESTER         | 764.99                        | 100.00       | .         | .            | .                                | .            | 173.36    | 764.99    | 1,472.48  |
| WEST VIRGINIA   | 54003 | BERKELEY           | 752.76                        | 2.34         | 30,601.06 | 95.18        | 796.48                           | 2.48         | 27,597.02 | 32,150.29 | 36,835.62 |
| WEST VIRGINIA   | 54023 | GRANT              | .                             | .            | 6,265.37  | 93.57        | 430.21                           | 6.43         | 5,715.84  | 6,695.57  | 7,691.32  |
| WEST VIRGINIA   | 54025 | GREENBRIAR         | 0.33                          | 17.64        | 1.50      | 80.28        | 0.04                             | 2.08         | 1.24      | 1.87      | 2.50      |
| WEST VIRGINIA   | 54027 | HAMPSHIRE          | .                             | .            | 11,510.16 | 93.94        | 742.24                           | 6.06         | 10,598.78 | 12,252.40 | 13,966.15 |
| WEST VIRGINIA   | 54031 | HARDY              | .                             | .            | 6,248.15  | 91.65        | 569.12                           | 8.35         | 5,598.64  | 6,817.27  | 8,102.84  |
| WEST VIRGINIA   | 54037 | JEFFERSON          | 198.48                        | 0.94         | 20,055.35 | 95.18        | 817.03                           | 3.88         | 18,422.32 | 21,070.85 | 23,781.51 |
| WEST VIRGINIA   | 54057 | MINERAL            | 1,653.76                      | 12.76        | 10,897.32 | 84.05        | 413.70                           | 3.19         | 10,612.95 | 12,964.79 | 15,338.80 |
| WEST VIRGINIA   | 54063 | MONROE             | .                             | .            | 579.76    | 90.31        | 62.23                            | 9.69         | 537.51    | 642.00    | 746.49    |
| WEST VIRGINIA   | 54065 | MORGAN             | .                             | .            | 8,631.78  | 98.15        | 163.01                           | 1.85         | 7,742.74  | 8,794.79  | 9,884.41  |
| WEST VIRGINIA   | 54071 | PENDLETON          | .                             | .            | 4,818.66  | 87.47        | 690.02                           | 12.53        | 4,535.21  | 5,508.68  | 6,482.14  |
| WEST VIRGINIA   | 54075 | POCAHONTAS         | .                             | .            | 1.81      | 88.96        | 0.22                             | 10.99        | 1.62      | 2.03      | 2.44      |
| WEST VIRGINIA   | 54077 | PRESTON            | .                             | .            | 43.27     | 94.08        | 2.72                             | 5.92         | 42.24     | 45.99     | 49.73     |
| WEST VIRGINIA   | 54083 | RANDOLPH           | .                             | .            | 1.46      | 89.74        | 0.17                             | 10.26        | 1.42      | 1.63      | 1.84      |

Table 6

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |        | b. POPULATION USING SEPTIC AS: |              |              |              |            |              | TOTAL POPULATION<br>USING SEPTIC |              |              |
|--|-------|--------|--------------------------------|--------------|--------------|--------------|------------|--------------|----------------------------------|--------------|--------------|
| STATE  | FIPS  | COUNTY | URBAN                          | % Mean Total | RURAL        | % Mean Total | FARM       | % Mean Total | MIN                              | MEAN         | MAX          |
| WEST VIRGINIA  | 54093 | TUCKER | -                              | -            | 5.24         | 97.98        | 0.11       | 2.02         | 1.64                             | 5.34         | 9.13         |
| Grand Total  |       |        | 551,782.83                     | 15.31        | 2,899,893.39 | 80.48        | 151,259.03 | 4.20         | 3,080,323.42                     | 3,603,064.21 | 4,167,616.70 |



POPULATION AS URBAN, RURAL AND FARM TYPES AND MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

| STATE                | FIPS  | COUNTY         | c. POPULATION USING OTHER MEANS OF DISPOSAL AS: |              |          |              |        |              | TOTAL POPULATION USING OTHER MEANS |           |           | TOTAL POPULATION |
|----------------------|-------|----------------|---|--------------|----------|--------------|--------|--------------|------------------------------------|-----------|-----------|------------------|
|                      |       |                | URBAN   | % Mean Total | RURAL    | % Mean Total | FARM   | % Mean Total | MTN                                | NEAN      | MAX       |                  |
| DELAWARE             | 10001 | KENT           | 0.46  | 0.15         | 268.63   | 87.75        | 37.05  | 12.10        |                                    |           |           |                  |
| DELAWARE             | 10003 | NEW CASTLE     | 0.31  | 1.19         | 21.84    | 83.30        | 4.07   | 15.51        | 25.32                              | 396.14    | 753.33    | 16,826.47        |
| DELAWARE             | 10005 | SUSSEX         | 100.17  | 7.45         | 1,077.29 | 80.15        | 166.60 | 12.40        | -                                  | 26.22     | 72.28     | 5,049.70         |
| DISTRICT OF COLUMBIA | 11001 | WASHINGTON     | 4,063.00  | 100.00       | -        | -            | -      | -            | 137.38                             | 1,344.07  | 2,814.73  | 47,099.13        |
| MARYLAND             | 24001 | ALLEGANY       | 90.32   | 15.68        | 460.41   | 79.92        | 25.36  | 4.40         | 122.67                             | 4,063.00  | 10,089.69 | 563,951.58       |
| MARYLAND             | 24003 | ANNE ARUNDEL   | 1,386.05  | 73.11        | 541.13   | 24.94        | 41.93  | 1.93         | -                                  | 576.08    | 1,670.43  | 71,892.60        |
| MARYLAND             | 24005 | BALTIMORE      | 1,261.97  | 56.33        | 977.43   | 43.63        | -      | -            | 9.41                               | 2,169.29  | 5,845.57  | 411,896.69       |
| MARYLAND             | 24009 | CALVERT        | 36.48   | 2.48         | 1,242.68 | 84.56        | 190.50 | 12.96        | -                                  | 2,239.41  | 6,281.49  | 678,475.83       |
| MARYLAND             | 24011 | CAROLINE       | 3.68  | 0.52         | 682.93   | 96.38        | 22.00  | 3.10         | 214.75                             | 1,469.66  | 3,130.36  | 51,086.02        |
| MARYLAND             | 24013 | CARROLL        | 57.98   | 3.77         | 1,478.74 | 96.23        | -      | -            | 35.81                              | 708.60    | 1,706.50  | 26,531.00        |
| MARYLAND             | 24015 | CECIL          | 93.63   | 7.78         | 1,126.97 | 91.60        | 7.63   | -            | 17.34                              | 1,536.72  | 3,904.08  | 120,386.02       |
| MARYLAND             | 24017 | CHARLES        | 183.57  | 6.16         | 2,686.70 | 90.12        | 110.86 | 3.72         | 24.73                              | 1,230.26  | 3,064.53  | 63,663.85        |
| MARYLAND             | 24019 | DORCHESTER     | 15.50   | 1.54         | 922.19   | 91.39        | 71.33  | 7.07         | 717.83                             | 2,981.13  | 5,796.40  | 100,041.04       |
| MARYLAND             | 24021 | FREDERICK      | 398.26  | 18.49        | 1,735.29 | 81.51        | -      | -            | 62.92                              | 1,009.02  | 2,243.25  | 29,758.01        |
| MARYLAND             | 24023 | GARRETT        | -   | -            | 171.94   | 86.12        | 27.70  | 13.88        | 61.56                              | 2,153.56  | 5,299.55  | 146,439.15       |
| MARYLAND             | 24025 | HARFORD        | 125.83  | 8.61         | 1,334.92 | 91.39        | -      | -            | 2.41                               | 199.64    | 481.36    | 5,022.38         |
| MARYLAND             | 24027 | HOWARD         | 147.78  | 24.17        | 463.64   | 75.83        | -      | -            | 78.10                              | 1,460.75  | 3,540.89  | 178,616.95       |
| MARYLAND             | 24029 | KENT           | 14.99   | 2.52         | 562.60   | 94.49        | 17.79  | 2.99         | 5.23                               | 611.42    | 1,645.35  | 185,406.21       |
| MARYLAND             | 24031 | MONTGOMERY     | 1,279.33  | 77.02        | 381.73   | 22.98        | -      | -            | 12.21                              | 593.38    | 1,451.48  | 16,719.00        |
| MARYLAND             | 24033 | PRINCE GEORGES | 2,204.71  | 86.02        | 357.93   | 13.96        | -      | -            | 0.22                               | 1,661.05  | 4,619.08  | 749,321.59       |
| MARYLAND             | 24035 | QUEEN ANNE'S   | -   | -            | 687.58   | 98.92        | 7.54   | -            | 57.48                              | 2,563.10  | 6,541.51  | 712,977.79       |
| MARYLAND             | 24037 | SANT MARY'S    | 80.08   | 3.93         | 1,423.57 | 69.80        | 335.96 | 26.28        | 16.75                              | 691.11    | 1,630.33  | 33,641.01        |
| MARYLAND             | 24039 | SOMERSET       | 3.49  | 0.79         | 395.43   | 90.08        | 40.05  | 9.12         | 155.66                             | 2,039.60  | 4,625.91  | 73,255.04        |
| MARYLAND             | 24041 | TALEOT         | 38.66   | 11.27        | 298.77   | 87.12        | 5.53   | 1.61         | -                                  | 431.96    | 1,137.35  | 19,743.01        |
| MARYLAND             | 24043 | WASHINGTON     | 80.01   | 5.09         | 1,339.22 | 85.26        | 151.56 | 9.65         | -                                  | 342.96    | 1,053.31  | 10,136.00        |
| MARYLAND             | 24045 | WICOMICO       | 77.18   | 9.78         | 648.26   | 82.13        | 63.85  | 8.09         | 73.07                              | 1,570.79  | 3,726.55  | 13,408.98        |
| MARYLAND             | 24047 | WORCESTER      | 4.56  | 1.86         | 214.90   | 87.68        | 25.64  | 10.46        | 52.66                              | 789.29    | 1,915.14  | 71,296.99        |
| MARYLAND             | 24510 | BALTIMORE CITY | 10,437.17                                       | 100.00       | -        | -            | -      | -            | -                                  | 245.11    | 646.25    | 13,431.65        |
| NEW YORK             | 36003 | ALLEGANY       | -   | -            | 35.46    | 91.16        | 3.44   | 8.84         | 672.95                             | 10,437.17 | 24,023.07 | 715,477.21       |
| NEW YORK             | 36007 | BROOME         | 91.35   | 14.61        | 397.79   | 63.63        | 136.02 | 21.76        | -                                  | 38.89     | 145.00    | 3,238.64         |
|                      |       |                |   |              |          |              |        |              |                                    | 625.16    | 1,916.49  | 201,886.37       |

Table 6

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |             | e. POPULATION USING OTHER MEANS OF DISPOSAL AS: |              |          |              |        |              | TOTAL POPULATION<br>USING OTHER MEANS |          |          | TOTAL POPULATION |
|--|-------|-------------|---|--------------|----------|--------------|--------|--------------|---------------------------------------|----------|----------|------------------|
| STATE  | FIPS  | COUNTY      | URBAN   | % Mean Total | RURAL    | % Mean Total | FARM   | % Mean Total | MIN                                   | MEAN     | MAX      |                  |
| NEW YORK   | 36011 | CAYUGA      | -   | -            | 0.00     | 100.00       | -      | -            | -                                     | 0.00     | 0.02     | 56.15            |
| NEW YORK   | 36015 | CHEMUNG     | 145.75  | 32.93        | 231.93   | 52.41        | 6486   | 14.66        | -                                     | 442.54   | 1,281.65 | 86,119.48        |
| NEW YORK   | 36017 | CHEMUNGO    | 5.57  | 0.51         | 1,044.35 | 96.59        | 31.29  | 2.89         | 50.00                                 | 1,081.21 | 2,804.57 | 50,741.28        |
| NEW YORK   | 36023 | CORTLAND    | 23.37   | 4.19         | 476.31   | 85.44        | 57.82  | 10.37        | 27.60                                 | 557.51   | 1,419.09 | 43,179.23        |
| NEW YORK   | 36025 | DELAWARE    | -   | -            | 178.50   | 87.59        | 25.30  | 12.41        | -                                     | 203.90   | 588.30   | 14,161.84        |
| NEW YORK   | 36043 | HERKIMER    | -   | -            | 31.41    | 94.86        | 1.70   | 5.14         | -                                     | 33.12    | 126.49   | 4,271.03         |
| NEW YORK   | 36051 | LIVINGSTON  | -   | -            | 6.08     | 97.80        | 0.14   | 2.20         | -                                     | 6.22     | 23.38    | 366.16           |
| NEW YORK   | 36053 | MADISON     | 53.40   | 12.88        | 347.26   | 83.75        | 13.97  | 3.37         | 5.15                                  | 414.63   | 1,013.54 | 15,410.70        |
| NEW YORK   | 36065 | ONEIDA EAST | 2.02  | 8.48         | 19.18    | 83.63        | 1.88   | 7.89         | -                                     | 23.77    | 92.38    | 2,849.91         |
| NEW YORK   | 36067 | ONONDAGA    | -   | -            | 40.10    | 86.33        | 6.35   | 13.67        | -                                     | 46.45    | 131.67   | 2,912.11         |
| NEW YORK   | 36069 | ONTARIO     | -   | -            | -        | -            | -      | -            | -                                     | -        | -        | 111.84           |
| NEW YORK   | 36077 | OTSEGO      | 11.00   | 1.80         | 542.21   | 88.54        | 59.17  | 9.66         | 11.00                                 | 612.37   | 1,967.54 | 54,931.10        |
| NEW YORK   | 36095 | SCHOHARE    | -   | -            | 41.20    | 93.03        | 3.09   | 6.97         | -                                     | 44.28    | 130.28   | 1,066.26         |
| NEW YORK   | 36097 | SCHUYLER    | -   | -            | 121.01   | 73.34        | 43.99  | 26.66        | 3.24                                  | 165.00   | 414.67   | 4,121.09         |
| NEW YORK   | 36101 | STEUBEN     | -   | -            | 2,022.97 | 85.27        | 349.44 | 14.73        | 271.76                                | 2,372.41 | 5,337.30 | 87,461.27        |
| NEW YORK   | 36107 | TIOGA       | 58.33   | 6.99         | 719.12   | 86.30        | 55.90  | 6.70         | 4.25                                  | 834.04   | 2,195.29 | 51,974.01        |
| NEW YORK   | 36109 | TOMPKINS    | -   | -            | 90.13    | 92.25        | 7.60   | 7.75         | 0.38                                  | 98.02    | 221.84   | 5,554.93         |
| NEW YORK   | 36123 | YATES       | -   | -            | 9.16     | 86.13        | 1.59   | 13.87        | -                                     | 11.45    | 28.22    | 256.95           |
| PENNSYLVANIA   | 42001 | ADAMS       | -   | -            | 1,376.20 | 95.28        | 68.14  | 4.72         | 360.86                                | 1,444.34 | 2,759.47 | 75,211.01        |
| PENNSYLVANIA   | 42009 | BERKSFORD   | -   | -            | 1,100.30 | 95.80        | 48.21  | 4.20         | 264.56                                | 1,148.52 | 2,183.17 | 47,604.33        |
| PENNSYLVANIA   | 42011 | BERKS       | 0.10  | 0.05         | 154.71   | 81.58        | 34.29  | 18.08        | 1.51                                  | 189.64   | 480.79   | 12,421.08        |
| PENNSYLVANIA   | 42013 | BLAIR       | 181.75  | 16.28        | 860.51   | 77.09        | 74.05  | 6.63         | 77.76                                 | 1,116.30 | 2,792.48 | 127,631.05       |
| PENNSYLVANIA   | 42015 | BRADFORD    | 27.99   | 1.21         | 2,163.18 | 93.45        | 123.72 | 5.34         | 1,172.17                              | 2,314.89 | 3,681.99 | 60,121.98        |
| PENNSYLVANIA   | 42021 | CAMBRIA     | -   | -            | 1,185.57 | 98.70        | 15.61  | 1.30         | 527.46                                | 1,201.27 | 1,939.29 | 32,132.25        |
| PENNSYLVANIA   | 42023 | CAMERON     | -   | -            | 425.57   | 100.00       | -      | -            | 137.53                                | 425.57   | 713.62   | 5,856.38         |
| PENNSYLVANIA   | 42025 | CARBON      | -   | -            | 0.04     | 100.00       | 0.00   | 2.56         | 0.01                                  | 0.04     | 0.07     | 1.29             |
| PENNSYLVANIA   | 42027 | CENTRE      | -   | -            | 983.15   | 90.23        | 106.57 | 9.77         | 197.88                                | 1,090.42 | 2,325.51 | 108,783.03       |
| PENNSYLVANIA   | 42029 | CHESTER     | -   | -            | 384.16   | 92.25        | 32.30  | 7.75         | 43.38                                 | 416.66   | 871.45   | 25,898.48        |
| PENNSYLVANIA   | 42033 | CLEARFIELD  | -   | -            | 2,220.11 | 100.00       | -      | -            | 786.38                                | 2,220.81 | 3,776.76 | 57,828.23        |
| PENNSYLVANIA   | 42035 | CLINTON     | -   | -            | 1,314.19 | 94.89        | 70.80  | 5.11         | 784.16                                | 1,385.19 | 2,056.25 | 35,107.02        |

Table 6

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRJ-CHESAPEAKE, Inc.

| STATE        | FIPS  | COUNTY         | e. POPULATION USING OTHER MEANS OF DISPOSAL AS: |              |          |              |          |              | TOTAL POPULATION USING OTHER MEANS |          |           | TOTAL POPULATION |
|--------------|-------|----------------|---|--------------|----------|--------------|----------|--------------|------------------------------------|----------|-----------|------------------|
|              |       |                | URBAN   | % Mean Total | RURAL    | % Mean Total | FARM     | % Mean Total | MIN                                | MEAN     | MAX       |                  |
|              |       |                |   |              |          |              |          |              |                                    |          |           |                  |
| PENNSYLVANIA | 42037 | COLUMBIA       | -   | -            | 737.23   | 95.65        | 33.53    | 4.35         | 115.78                             | 770.76   | 1,389.08  | 39,565.06        |
| PENNSYLVANIA | 42041 | CUMBERLAND     | 230.04  | 15.24        | 1,257.49 | 83.33        | 21.59    | 1.43         | 246.38                             | 1,509.12 | 3,355.15  | 184,125.03       |
| PENNSYLVANIA | 42043 | DAUPHIN        | 303.31  | 38.57        | 1,279.19 | 61.43        | -        | -            | 244.92                             | 2,082.50 | 4,615.82  | 233,393.12       |
| PENNSYLVANIA | 42047 | ELK            | -   | -            | 134.75   | 100.00       | -        | -            | 8.35                               | 134.75   | 295.77    | 6,789.39         |
| PENNSYLVANIA | 42055 | FRANKLIN       | -   | -            | 1,671.10 | 91.66        | 152.00   | 8.34         | 441.39                             | 1,821.10 | 3,146.68  | 118,441.00       |
| PENNSYLVANIA | 42057 | FULTON         | -   | -            | 335.87   | 94.59        | 19.20    | 5.41         | 64.61                              | 351.07   | 667.02    | 13,761.00        |
| PENNSYLVANIA | 42061 | HUNTINGDON     | -   | -            | 1,084.64 | 96.33        | 38.99    | 3.47         | 279.44                             | 1,121.63 | 2,081.52  | 39,988.99        |
| PENNSYLVANIA | 42063 | INDIANA        | -   | -            | 257.36   | 93.27        | 18.58    | 6.73         | 103.72                             | 275.94   | 450.44    | 3,434.23         |
| PENNSYLVANIA | 42065 | JEFFERSON      | -   | -            | 0.41     | 100.00       | -        | -            | 0.23                               | 0.41     | 0.60      | 3.58             |
| PENNSYLVANIA | 42067 | JUNIATA        | -   | -            | 626.60   | 83.01        | 128.29   | 16.99        | 211.19                             | 754.89   | 1,341.74  | 20,270.98        |
| PENNSYLVANIA | 42069 | LACKAWANNA     | 313.51  | 30.30        | 721.16   | 69.70        | -        | -            | 108.07                             | 1,034.67 | 2,442.54  | 206,982.31       |
| PENNSYLVANIA | 42071 | LANCASTER      | 1,311.03  | 22.79        | 3,276.06 | 56.96        | 1,164.72 | 20.25        | 694.54                             | 5,751.81 | 12,713.04 | 409,578.53       |
| PENNSYLVANIA | 42075 | LEBANON        | 100.65  | 15.93        | 428.32   | 67.79        | 102.83   | 16.28        | 1.91                               | 631.80   | 1,669.77  | 95,595.65        |
| PENNSYLVANIA | 42079 | LUZERNE        | 657.22  | 31.36        | 1,438.51 | 68.64        | -        | -            | 256.40                             | 2,091.73 | 4,939.67  | 304,577.05       |
| PENNSYLVANIA | 42081 | LYCOMING       | 216.64  | 11.74        | 1,569.56 | 85.08        | 58.70    | 3.18         | 357.78                             | 1,844.90 | 3,568.99  | 115,143.95       |
| PENNSYLVANIA | 42083 | MCKEAN         | -   | -            | 3.03     | 100.00       | -        | -            | 0.03                               | 3.03     | 7.33      | 205.77           |
| PENNSYLVANIA | 42087 | MIFFLIN        | -   | -            | 1,194.19 | 76.21        | 372.71   | 23.79        | 310.81                             | 1,566.90 | 3,101.47  | 45,702.00        |
| PENNSYLVANIA | 42093 | MONTOUR        | 7.06  | 3.09         | 205.49   | 89.95        | 15.90    | 6.96         | 25.03                              | 228.45   | 471.68    | 16,513.00        |
| PENNSYLVANIA | 42097 | NORTHUMBERLAND | 73.40   | 8.11         | 796.47   | 88.00        | 35.23    | 3.89         | 98.99                              | 905.10   | 2,036.87  | 95,209.96        |
| PENNSYLVANIA | 42099 | PERRY          | -   | -            | 1,405.28 | 96.56        | 50.07    | 3.44         | 626.96                             | 1,453.35 | 2,475.50  | 40,828.03        |
| PENNSYLVANIA | 42105 | POTTER         | -   | -            | 404.90   | 100.00       | -        | -            | 132.23                             | 404.90   | 684.23    | 5,542.71         |
| PENNSYLVANIA | 42107 | SCHUYLKILL     | 53.29   | 3.63         | 1,379.22 | 93.96        | 35.41    | 2.41         | 395.92                             | 1,461.92 | 2,841.62  | 51,784.92        |
| PENNSYLVANIA | 42109 | SNYDER         | -   | -            | 1,282.28 | 73.27        | 467.79   | 26.73        | 914.66                             | 1,750.07 | 2,648.91  | 34,535.97        |
| PENNSYLVANIA | 42111 | SOMERSET       | -   | -            | 121.74   | 91.52        | 11.27    | 8.48         | 27.73                              | 133.01   | 248.79    | 2,661.71         |
| PENNSYLVANIA | 42113 | SULLIVAN       | -   | -            | 197.85   | 97.54        | 5.00     | 2.47         | 6.60                               | 202.85   | 414.68    | 5,662.00         |
| PENNSYLVANIA | 42115 | SUSQUEHANNA    | -   | -            | 1,383.39 | 97.54        | 34.95    | 2.46         | 609.40                             | 1,418.34 | 2,361.77  | 40,060.01        |
| PENNSYLVANIA | 42117 | TIOGA          | 7.14  | 0.54         | 1,237.71 | 94.43        | 65.85    | 5.02         | 456.36                             | 1,310.70 | 2,304.02  | 39,145.02        |
| PENNSYLVANIA | 42119 | UNION          | -   | -            | 394.99   | 77.05        | 117.66   | 22.95        | 116.75                             | 512.65   | 1,001.25  | 30,830.98        |
| PENNSYLVANIA | 42127 | WAYNE          | -   | -            | 50.70    | 94.54        | 2.93     | 5.46         | 7.85                               | 53.63    | 112.13    | 1,314.81         |
| PENNSYLVANIA | 42131 | WYOMING        | -   | -            | 483.54   | 97.76        | 11.08    | 2.24         | 20.97                              | 494.61   | 1,071.85  | 27,241.99        |

Table 6

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |              | b. POPULATION USING OTHER MEANS OF DISPOSAL AS: |              |          |              |        |              | TOTAL POPULATION<br>USING OTHER MEANS |          |          | TOTAL POPULATION |
|--|-------|--------------|---|--------------|----------|--------------|--------|--------------|---------------------------------------|----------|----------|------------------|
| STATE  | FIPS  | COUNTY       | URBAN   | % Mean Total | RURAL    | % Mean Total | FARM   | % Mean Total | MIN                                   | MEAN     | MAX      |                  |
| PENNSYLVANIA   | 42133 | YORK         | 225.47  | 5.77         | 3,623.15 | 92.67        | 61.68  | 1.56         | 355.12                                | 3,909.69 | 8,990.93 |                  |
| VIRGINIA   | 51001 | ACCOMACK     | -   | -            | 1,343.33 | 92.53        | 108.41 | 7.47         | 274.71                                | 1,451.74 | 2,751.73 | 15,671.44        |
| VIRGINIA   | 51003 | ALBEMARLE    | 42.00   | 3.22         | 1,194.18 | 91.52        | 68.69  | 5.26         | 106.98                                | 1,304.87 | 2,934.50 | 61,789.10        |
| VIRGINIA   | 51005 | ALLEGHANY    | -   | -            | 678.90   | 100.00       | -      | -            | 71.07                                 | 678.90   | 1,492.35 | 12,967.10        |
| VIRGINIA   | 51007 | AMELIA       | -   | -            | 657.02   | 91.28        | 62.73  | 8.72         | 90.98                                 | 719.75   | 1,424.69 | 8,763.00         |
| VIRGINIA   | 51009 | AMHERST      | 86.04   | 8.13         | 911.67   | 86.19        | 60.62  | 5.67         | 82.74                                 | 1,057.73 | 2,228.73 | 26,283.00        |
| VIRGINIA   | 51011 | APPOMATTOX   | -   | -            | 217.72   | 92.11        | 18.65  | 7.69         | 0.34                                  | 236.37   | 584.80   | 7,378.26         |
| VIRGINIA   | 51013 | ARLINGTON    | 430.62  | 100.00       | -        | -            | -      | -            | -                                     | 430.62   | 1,130.18 | 166,705.88       |
| VIRGINIA   | 51015 | AUGUSTA      | 93.01   | 4.78         | 1,690.50 | 86.95        | 160.68 | 8.26         | 77.59                                 | 1,944.19 | 4,364.91 | 53,049.02        |
| VIRGINIA   | 51017 | BATH         | -   | -            | 539.25   | 93.13        | 39.76  | 6.17         | 208.57                                | 579.01   | 991.35   | 4,742.91         |
| VIRGINIA   | 51019 | BEDFORD      | 46.38   | 14.72        | 258.71   | 81.77        | 11.10  | 3.51         | 32.65                                 | 316.39   | 684.95   | 8,998.14         |
| VIRGINIA   | 51023 | BOTETOURT    | -   | -            | 591.36   | 100.00       | -      | -            | 53.35                                 | 591.36   | 1,296.43 | 12,668.26        |
| VIRGINIA   | 51029 | BUCKINGHAM   | -   | -            | 1,088.45 | 95.75        | 48.32  | 4.25         | 139.39                                | 1,136.75 | 2,211.61 | 11,743.01        |
| VIRGINIA   | 51031 | CAMPBELL     | 5.55  | 4.22         | 123.91   | 94.42        | 1.79   | 1.36         | 0.20                                  | 131.31   | 334.47   | 12,364.33        |
| VIRGINIA   | 51033 | CAROLINE     | -   | -            | 1,328.65 | 99.00        | 13.40  | 1.00         | 216.61                                | 1,342.05 | 2,615.94 | 18,939.40        |
| VIRGINIA   | 51036 | CHARLES CITY | -   | -            | 690.10   | 100.00       | -      | -            | 183.56                                | 690.10   | 1,248.77 | 6,282.40         |
| VIRGINIA   | 51037 | CHARLOTTE    | -   | -            | 0.07     | 94.59        | 0.03   | 5.41         | 0.00                                  | 0.07     | 0.15     | 1.19             |
| VIRGINIA   | 51041 | CHESTERFIELD | 308.91  | 56.10        | 241.74   | 43.90        | -      | -            | -                                     | 550.65   | 1,873.38 | 206,821.10       |
| VIRGINIA   | 51043 | CLARKE       | 0.11  | 0.02         | 417.27   | 95.83        | 18.03  | 4.14         | -                                     | 435.41   | 992.55   | 11,743.00        |
| VIRGINIA   | 51045 | CRAIG        | -   | -            | 224.22   | 100.00       | -      | -            | 36.92                                 | 224.22   | 411.52   | 3,678.90         |
| VIRGINIA   | 51047 | CULPEPER     | 148.44  | 8.12         | 1,609.64 | 88.02        | 70.74  | 3.87         | 450.94                                | 1,828.83 | 3,333.64 | 27,277.98        |
| VIRGINIA   | 51049 | CUMBERLAND   | 21.50   | 2.20         | 880.85   | 90.13        | 74.97  | 7.67         | 281.82                                | 977.35   | 1,744.43 | 7,779.00         |
| VIRGINIA   | 51053 | DINWIDDIE    | -   | -            | 121.58   | 91.73        | 10.97  | 8.27         | 15.43                                 | 132.55   | 266.60   | 7,112.08         |
| VIRGINIA   | 51057 | ESSEX        | -   | -            | 550.17   | 90.72        | 56.25  | 9.28         | 80.59                                 | 606.43   | 1,256.10 | 8,545.00         |
| VIRGINIA   | 51059 | FAIRFAX      | 2,115.63  | 94.77        | 116.70   | 5.23         | -      | -            | 62.90                                 | 2,232.33 | 5,659.20 | 804,354.71       |
| VIRGINIA   | 51061 | FAUQUIER     | 5.20  | 0.42         | 1,174.30 | 94.65        | 61.14  | 4.93         | 158.40                                | 1,240.63 | 2,534.67 | 47,699.00        |
| VIRGINIA   | 51065 | FLUVANNA     | -   | -            | 709.65   | 96.94        | 22.41  | 3.05         | 65.58                                 | 732.06   | 1,478.88 | 12,342.00        |
| VIRGINIA   | 51069 | FREDERICK    | -   | -            | 1,532.32 | 98.58        | 22.11  | 1.42         | 91.74                                 | 1,554.43 | 3,548.22 | 45,465.02        |
| VIRGINIA   | 51071 | GILES        | -   | -            | 16.38    | 100.00       | -      | -            | -                                     | 16.38    | 36.23    | 316.92           |
| VIRGINIA   | 51073 | GLOUCESTER   | 118.71  | 9.23         | 1,124.48 | 87.40        | 43.34  | 3.37         | 221.53                                | 1,286.54 | 2,603.51 | 29,812.01        |

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                | c. POPULATION USING OTHER MEANS OF DISPOSAL AS: |              |          |              |       |              | TOTAL POPULATION<br>USING OTHER MEANS |          |          | TOTAL POPULATION |
|--|-------|----------------|---|--------------|----------|--------------|-------|--------------|---------------------------------------|----------|----------|------------------|
| STATE  | FIPS  | COUNTY         | URBAN   | % Mean Total | RURAL    | % Mean Total | FARM  | % Mean Total | MIN                                   | MEAN     | MAX      |                  |
| VIRGINIA   | 51075 | GOOCHLAND      | -   | -            | 865.99   | 100.00       | -     | -            | 113.43                                | 845.99   | 1,811.23 | 13,155.00        |
| VIRGINIA   | 51079 | GREENE         | -   | -            | 513.00   | 96.15        | 20.55 | 3.85         | 135.25                                | 513.54   | 1,041.34 | 10,297.00        |
| VIRGINIA   | 51085 | HANOVER        | 122.28  | 6.43         | 1,778.38 | 93.57        | -     | -            | 277.51                                | 1,900.66 | 3,972.34 | 61,851.02        |
| VIRGINIA   | 51087 | HENRICO        | 256.33  | 41.27        | 364.71   | 58.73        | -     | -            | -                                     | 621.04   | 1,875.15 | 215,121.73       |
| VIRGINIA   | 51091 | HIGHLAND       | -   | -            | 300.83   | 79.56        | 77.28 | 20.44        | 61.87                                 | 378.10   | 717.02   | 2,634.48         |
| VIRGINIA   | 51093 | ISLE OF WIGHT  | 4.02  | 1.10         | 339.37   | 93.20        | 20.77 | 5.70         | 9.47                                  | 364.35   | 846.01   | 17,184.32        |
| VIRGINIA   | 51095 | JAMES CITY     | 34.06   | 11.78        | 250.86   | 86.79        | 4.13  | 1.43         | 9.54                                  | 289.04   | 728.73   | 33,767.99        |
| VIRGINIA   | 51097 | KING AND QUEEN | -   | -            | 363.75   | 81.35        | 83.39 | 18.65        | 107.78                                | 447.14   | 823.10   | 6,289.00         |
| VIRGINIA   | 51099 | KING GEORGE    | -   | -            | 377.63   | 98.65        | 5.16  | 1.35         | 7.85                                  | 382.79   | 929.87   | 13,189.00        |
| VIRGINIA   | 51101 | KING WILLIAM   | -   | -            | 502.48   | 89.03        | 61.94 | 10.97        | 60.44                                 | 564.42   | 1,101.73 | 10,830.00        |
| VIRGINIA   | 51103 | LANCASTER      | -   | -            | 352.57   | 94.18        | 34.15 | 5.82         | 31.63                                 | 586.72   | 1,369.65 | 10,684.01        |
| VIRGINIA   | 51107 | LOUDOUN        | 20.47   | 2.28         | 828.74   | 92.25        | 49.15 | 5.47         | 61.86                                 | 891.37   | 2,138.65 | 85,517.97        |
| VIRGINIA   | 51109 | LOUISA         | -   | -            | 1,564.08 | 94.97        | 82.79 | 5.03         | 283.47                                | 1,646.87 | 3,138.41 | 20,153.99        |
| VIRGINIA   | 51111 | LUNENBERG      | -   | -            | 0.15     | 97.33        | 0.00  | 2.67         | 0.00                                  | 0.15     | 0.30     | 2.43             |
| VIRGINIA   | 51113 | MADISON        | -   | -            | 1,050.09 | 93.67        | 70.91 | 6.33         | 499.67                                | 1,121.00 | 1,788.78 | 11,722.00        |
| VIRGINIA   | 51115 | MATHEWS        | -   | -            | 398.83   | 97.37        | 10.76 | 2.63         | 69.48                                 | 408.58   | 771.15   | 8,281.00         |
| VIRGINIA   | 51119 | MIDDLESEX      | -   | -            | 316.02   | 92.90        | 24.15 | 7.10         | -                                     | 340.17   | 860.33   | 8,454.00         |
| VIRGINIA   | 51121 | MONTGOMERY     | -   | -            | 43.21    | 100.00       | -     | -            | 8.07                                  | 43.21    | 78.36    | 565.81           |
| VIRGINIA   | 51125 | NELSON         | -   | -            | 1,879.94 | 96.37        | 70.81 | 3.63         | 711.67                                | 1,950.74 | 3,259.64 | 12,637.00        |
| VIRGINIA   | 51127 | NEW KENT       | -   | -            | 263.98   | 100.00       | -     | -            | 4.11                                  | 263.98   | 632.11   | 10,276.00        |
| VIRGINIA   | 51131 | NORTHAMPTON    | -   | -            | 625.77   | 89.52        | 73.29 | 10.48        | 90.26                                 | 695.06   | 1,382.89 | 8,135.41         |
| VIRGINIA   | 51133 | NORTHUMBERLAND | -   | -            | 615.63   | 88.43        | 80.55 | 11.57        | 53.64                                 | 696.18   | 1,516.41 | 10,507.01        |
| VIRGINIA   | 51135 | NOTTOWAY       | -   | -            | 367.29   | 91.36        | 34.73 | 8.64         | 22.03                                 | 402.02   | 840.18   | 7,502.86         |
| VIRGINIA   | 51137 | ORANGE         | 2.29  | 0.26         | 822.88   | 95.22        | 39.04 | 4.52         | 150.10                                | 864.21   | 1,706.12 | 21,190.01        |
| VIRGINIA   | 51139 | PAGE           | 2.51  | 0.35         | 711.59   | 97.95        | 12.35 | 1.70         | 10.02                                 | 726.45   | 1,738.12 | 21,487.02        |
| VIRGINIA   | 51145 | POWhatan       | -   | -            | 472.32   | 100.00       | -     | -            | 19.84                                 | 472.32   | 1,109.47 | 13,336.00        |
| VIRGINIA   | 51147 | PRINCE EDWARD  | 4.10  | 0.56         | 695.36   | 95.19        | 31.04 | 4.25         | 145.09                                | 730.51   | 1,454.11 | 13,859.59        |
| VIRGINIA   | 51149 | PRINCE GEORGE  | 59.28   | 14.49        | 180.27   | 74.47        | 2.52  | 1.04         | 4.11                                  | 242.06   | 564.13   | 12,913.86        |
| VIRGINIA   | 51153 | PRINCE WILLIAM | 199.24  | 20.81        | 747.93   | 78.13        | 10.13 | 1.06         | 8.72                                  | 957.30   | 2,495.26 | 21,872.93        |
| VIRGINIA   | 51157 | RAPPAHANNOCK   | -   | -            | 556.05   | 93.57        | 38.20 | 6.43         | 68.10                                 | 594.25   | 1,178.35 | 6,606.00         |

Table 6

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                   | c. POPULATION USING OTHER MEANS OF DISPOSAL AS: |              |          |              |        |              | TOTAL POPULATION<br>USING OTHER MEANS |          |          | TOTAL POPULATION |
|--|-------|-------------------|---|--------------|----------|--------------|--------|--------------|---------------------------------------|----------|----------|------------------|
| STATE  | FIPS  | COUNTY            | URBAN   | % Mean Total | RURAL    | % Mean Total | FARM   | % Mean Total | MIN                                   | MEAN     | MAX      |                  |
| VIRGINIA   | 51159 | RICHMOND          | -   | -            | 539.34   | 83.51        | 106.51 | 16.49        | 87.13                                 | 645.85   | 1,252.53 | 6,921.00         |
| VIRGINIA   | 51161 | ROANOKE           | -   | -            | 7.41     | 100.00       | -      | -            | -                                     | 7.41     | 24.33    | 1,012.45         |
| VIRGINIA   | 51163 | ROCKBRIDGE        | -   | -            | 1,289.61 | 93.70        | 86.75  | 6.30         | 192.80                                | 1,376.36 | 2,810.47 | 18,148.96        |
| VIRGINIA   | 51165 | ROCKINGHAM        | -   | -            | 2,155.60 | 91.51        | 200.09 | 8.49         | 146.94                                | 2,355.70 | 5,120.91 | 55,931.00        |
| VIRGINIA   | 51171 | SHENANDOAH        | 24.00   | 1.39         | 1,644.14 | 95.40        | 55.25  | 3.21         | 301.41                                | 1,723.40 | 3,483.62 | 31,118.00        |
| VIRGINIA   | 51177 | SPOTSYLVANIA      | 12.02   | 1.08         | 1,091.03 | 98.10        | 9.11   | 0.12         | 96.97                                 | 1,112.13 | 2,423.71 | 57,059.01        |
| VIRGINIA   | 51179 | STAFFORD          | 40.67   | 4.79         | 805.91   | 94.89        | 2.76   | 0.32         | 69.60                                 | 849.36   | 2,035.19 | 59,211.01        |
| VIRGINIA   | 51181 | SURRY             | -   | -            | 202.07   | 94.61        | 11.52  | 5.39         | 31.28                                 | 213.60   | 414.82   | 3,096.10         |
| VIRGINIA   | 51187 | WARREN            | 2.28  | 0.39         | 574.46   | 98.62        | 5.74   | 0.98         | 34.53                                 | 582.47   | 1,333.42 | 25,726.99        |
| VIRGINIA   | 51193 | WESTMORELAND      | 4.52  | 0.42         | 930.45   | 86.07        | 146.10 | 13.51        | 214.73                                | 1,081.07 | 2,134.25 | 15,445.00        |
| VIRGINIA   | 51199 | YORK              | 59.61   | 40.15        | 85.80    | 57.80        | 3.04   | 2.05         | -                                     | 148.44   | 428.85   | 41,904.00        |
| VIRGINIA   | 51510 | ALEXANDRIA        | 235.96  | 100.00       | -        | -            | -      | -            | 36.83                                 | 235.96   | 550.01   | 108,870.96       |
| VIRGINIA   | 51530 | BUENA VISTA       | 56.52   | 100.00       | -        | -            | -      | -            | -                                     | 56.52    | 183.18   | 5,178.00         |
| VIRGINIA   | 51540 | CHARLOTTESVILLE   | 173.04  | 100.00       | -        | -            | -      | -            | -                                     | 173.04   | 419.37   | 37,090.99        |
| VIRGINIA   | 51550 | CHESAPEAKE CITY   | 321.16  | 99.60        | 0.70     | 0.22         | 0.51   | 0.18         | -                                     | 322.43   | 989.71   | 126,964.36       |
| VIRGINIA   | 51560 | CLIFTON FORGE     | -   | -            | -        | -            | -      | -            | -                                     | -        | -        | 3,637.00         |
| VIRGINIA   | 51570 | COLONIAL HEIGHTS  | -   | -            | -        | -            | -      | -            | -                                     | -        | -        | 15,862.00        |
| VIRGINIA   | 51580 | COVINGTON         | -   | -            | -        | -            | -      | -            | -                                     | -        | -        | 5,903.00         |
| VIRGINIA   | 51600 | FAIRFAX           | 12.79   | 100.00       | -        | -            | -      | -            | -                                     | 12.79    | 47.89    | 18,120.01        |
| VIRGINIA   | 51610 | FALLS CHURCH      | 66.97   | 100.00       | -        | -            | -      | -            | -                                     | 66.97    | 144.49   | 9,539.00         |
| VIRGINIA   | 51630 | FREDERICKSBURG    | 12.05   | 100.00       | -        | -            | -      | -            | -                                     | 12.05    | 46.00    | 16,665.01        |
| VIRGINIA   | 51650 | HAMPTON CITY      | 395.01  | 100.00       | -        | -            | -      | -            | -                                     | 395.01   | 953.42   | 128,184.09       |
| VIRGINIA   | 51660 | HARRISONBURG      | 39.15   | 100.00       | -        | -            | -      | -            | -                                     | 39.15    | 124.05   | 23,724.99        |
| VIRGINIA   | 51670 | HOPEWELL          | 240.65  | 100.00       | -        | -            | -      | -            | 68.26                                 | 240.65   | 460.39   | 22,794.01        |
| VIRGINIA   | 51678 | LEXINGTON         | -   | -            | -        | -            | -      | -            | -                                     | -        | -        | 3,894.00         |
| VIRGINIA   | 51680 | LYNCHBURG         | 101.96  | 100.00       | -        | -            | -      | -            | -                                     | 101.96   | 292.31   | 60,121.02        |
| VIRGINIA   | 51683 | MANASSES CITY     | 27.33   | 100.00       | -        | -            | -      | -            | -                                     | 27.33    | 70.92    | 26,699.99        |
| VIRGINIA   | 51685 | MANASSES PARK CIT | -   | -            | -        | -            | -      | -            | -                                     | -        | -        | 6,734.01         |
| VIRGINIA   | 51700 | NEWPORT NEWS CIT  | 373.27  | 100.00       | -        | -            | -      | -            | 25.66                                 | 373.27   | 968.45   | 165,399.04       |
| VIRGINIA   | 51710 | NORFOLK CITY      | 776.46  | 100.00       | -        | -            | -      | -            | 20.41                                 | 776.46   | 2,016.70 | 228,063.56       |

POPULATION AS URBAN, RURAL AND FARM TYPES AND  
MEANS OF WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

| STATE         | FIPS  | COUNTY             | c. POPULATION USING OTHER MEANS OF DISPOSAL AS: |              |            |              | TOTAL POPULATION USING OTHER MEANS |              |           | TOTAL POPULATION |            |               |
|---------------|-------|--------------------|---|--------------|------------|--------------|------------------------------------|--------------|-----------|------------------|------------|---------------|
|               |       |                    | URBAN   | % Mean Total | RURAL      | % Mean Total | FARM                               | % Mean Total | MIN       |                  | MEAN       | MAX           |
|               |       |                    |   |              |            |              |                                    |              |           |                  |            |               |
| VIRGINIA      | 51730 | PETERSBURG         | 80.62   | 100.00       | .          | .            | .                                  | .            | 80.62     | 250.72           | 30,877.19  |               |
| VIRGINIA      | 51735 | POQUOSON           | 11.01   | 100.00       | .          | .            | .                                  | .            | 11.01     | 43.49            | 10,916.00  |               |
| VIRGINIA      | 51740 | PORTSMOUTH CITY    | 302.00  | 100.00       | .          | .            | .                                  | .            | 302.00    | 1,441.26         | 101,417.01 |               |
| VIRGINIA      | 51760 | RICHMOND CITY      | 721.78  | 100.00       | .          | .            | .                                  | .            | 721.78    | 1,882.27         | 191,951.00 |               |
| VIRGINIA      | 51790 | STAUNTON           | 91.39   | 100.00       | .          | .            | .                                  | 9.66         | 91.39     | 275.82           | 20,948.01  |               |
| VIRGINIA      | 51800 | SUFFOLK CITY       | 1,036.26  | 84.03        | 177.24     | 14.37        | 19.64                              | 1.59         | 299.88    | 1,231.15         | 39,649.88  |               |
| VIRGINIA      | 51810 | VIRGINIA BEACH CIT | 365.53  | 100.00       | .          | .            | .                                  | .            | 365.53    | 1,034.81         | 252,431.47 |               |
| VIRGINIA      | 51820 | WAYNESBORO         | 99.49   | 100.00       | .          | .            | .                                  | .            | 99.49     | 284.38           | 16,683.01  |               |
| VIRGINIA      | 51830 | WILLIAMSBURG       | 9.60  | 100.00       | .          | .            | .                                  | .            | 9.60      | 39.91            | 7,213.01   |               |
| VIRGINIA      | 51840 | WINCHESTER         | .   | .            | .          | .            | .                                  | .            | 5.60      | .                | 19,876.00  |               |
| WEST VIRGINIA | 54003 | BERKELEY           | 61.87   | 3.31         | 1,731.10   | 92.71        | 74.23                              | 3.98         | 231.23    | 1,867.20         | 3,815.89   |               |
| WEST VIRGINIA | 54023 | GRANT              | .   | .            | 582.26     | 93.98        | 37.28                              | 6.02         | 94.99     | 619.54           | 1,220.46   |               |
| WEST VIRGINIA | 54025 | GREENBRIAR         | .   | .            | 0.28       | 99.64        | .                                  | .            | 0.07      | 0.28             | 0.59       |               |
| WEST VIRGINIA | 54027 | HAMPSHIRE          | .   | .            | 1,499.38   | 92.55        | 120.72                             | 7.45         | 346.97    | 1,620.10         | 3,013.85   |               |
| WEST VIRGINIA | 54031 | HARDY              | .   | .            | 1,089.95   | 89.68        | 125.39                             | 10.32        | 260.88    | 1,215.34         | 2,220.86   |               |
| WEST VIRGINIA | 54037 | JEFFERSON          | .   | .            | 454.90     | 93.30        | 32.66                              | 6.70         | 15.21     | 487.56           | 1,194.37   |               |
| WEST VIRGINIA | 54057 | MINERAL            | 56.67   | 14.18        | 334.22     | 83.60        | 8.88                               | 2.22         | .         | 399.77           | 1,122.76   |               |
| WEST VIRGINIA | 54063 | MONROE             | .   | .            | 100.53     | 98.72        | 1.30                               | 1.28         | 17.06     | 101.33           | 191.17     |               |
| WEST VIRGINIA | 54065 | MORGAN             | .   | .            | 387.16     | 97.38        | 10.41                              | 2.62         | 48.61     | 397.37           | 871.07     |               |
| WEST VIRGINIA | 54071 | PENDLETON          | .   | .            | 1,144.69   | 85.31        | 197.13                             | 14.69        | 572.66    | 1,341.12         | 2,150.35   |               |
| WEST VIRGINIA | 54075 | POCAHONTAS         | .   | .            | 0.24       | 93.02        | 0.02                               | 6.98         | 0.02      | 0.26             | 0.55       |               |
| WEST VIRGINIA | 54077 | PRESTON            | .   | .            | 2.70       | 95.92        | 0.12                               | 4.08         | .         | 2.12             | 6.25       |               |
| WEST VIRGINIA | 54083 | RANDOLPH           | .   | .            | 0.15       | 99.35        | 0.00                               | 0.65         | .         | 0.15             | 0.36       |               |
| WEST VIRGINIA | 54093 | TUCKER             | .   | .            | 1.86       | 100.00       | .                                  | .            | .         | 1.86             | 4.26       |               |
| Grand Total   |       |                    | 37,125.02                                       | 21.77        | 124,247.42 | 72.85        | 9,181.98                           | 5.38         | 23,776.75 | 170,355.63       | 373,623.23 | 13,787,782.13 |

Table 6

Table 7. HOUSING UNITS AND POPULATION USING WASTE DISPOSAL MEANS BY HOUSING UNIT TYPE: MODEL SEGMENT SUMMARY

| Mod<br>Seq | Name              | Sub-basin               | Fall Line | A. HOUSING UNITS USING SEWER |            |               |               |            |               |               |            |               |               |            |               |
|------------|-------------------|-------------------------|-----------|------------------------------|------------|---------------|---------------|------------|---------------|---------------|------------|---------------|---------------|------------|---------------|
|            |                   |                         |           | URBAN                        |            |               | RURAL         |            |               | FARM          |            |               | ALL           |            |               |
|            |                   |                         |           | HOUSING UNITS                | POPULATION | AVG PERSONSHU | HOUSING UNITS | POPULATION | AVG PERSONSHU | HOUSING UNITS | POPULATION | AVG PERSONSHU | HOUSING UNITS | POPULATION | AVG PERSONSHU |
| 10         | East Branch 1     | Susquehanna             | Above     | 36,840                       | 84,875     | 2.4           | 7,311         | 17,488     | 2.4           | 4             | 12         | 3.2           | 43,684        | 108,053    | 2.4           |
| 20         | East Branch 1     | Susquehanna             | Above     | 80,740                       | 191,588    | 2.4           | 14,331        | 34,209     | 2.4           | 15            | 43         | 2.8           | 95,086        | 225,821    | 2.4           |
| 30         | East Branch 2     | Susquehanna             | Above     | 108,163                      | 258,835    | 2.4           | 8,518         | 21,091     | 2.5           | 9             | 30         | 3.2           | 114,691       | 280,955    | 2.4           |
| 40         | East Branch 2     | Susquehanna             | Above     | 82,644                       | 192,474    | 2.3           | 19,321        | 48,007     | 2.5           | 52            | 120        | 2.3           | 102,017       | 240,600    | 2.4           |
| 50         | West Branch       | Susquehanna             | Above     | 6,385                        | 14,455     | 2.3           | 10,000        | 25,271     | 2.5           | 13            | 25         | 2.0           | 16,398        | 39,751     | 2.4           |
| 60         | West Branch       | Susquehanna             | Above     | 42,037                       | 101,455    | 2.4           | 13,485        | 33,427     | 2.5           | 28            | 117        | 3.3           | 55,637        | 134,999    | 2.4           |
| 70         | West Branch       | Susquehanna             | Above     | 15,568                       | 36,854     | 2.4           | 6,948         | 16,494     | 2.4           | 24            | 59         | 2.5           | 22,540        | 53,406     | 2.4           |
| 80         | Lower Susquehanna | Susquehanna             | Above     | 85,386                       | 183,632    | 2.3           | 21,320        | 52,059     | 2.4           | 99            | 287        | 2.9           | 96,805        | 205,678    | 2.4           |
| 90         | Junata            | Susquehanna             | Above     | 1,462                        | 3,092      | 2.1           | 2,701         | 6,329      | 2.3           | 7             | 21         | 2.9           | 4,170         | 9,439      | 2.3           |
| 100        | Junata            | Susquehanna             | Above     | 39,396                       | 94,836     | 2.4           | 17,001        | 41,784     | 2.5           | 60            | 141        | 2.3           | 56,457        | 136,761    | 2.4           |
| 110        | Lower Susquehanna | Susquehanna             | Above     | 143,024                      | 340,006    | 2.4           | 31,749        | 81,484     | 2.6           | 90            | 208        | 2.3           | 174,863       | 421,732    | 2.4           |
| 120        | Conowingo         | Susquehanna             | Above     | 1,694                        | 4,109      | 2.4           | 1,849         | 4,745      | 2.6           | 14            | 67         | 4.8           | 3,558         | 8,921      | 2.5           |
| 140        | Conowingo         | Susquehanna             | Above     | 804                          | 1,876      | 2.3           | 518           | 1,319      | 2.5           | 2             | 5          | 2.7           | 1,325         | 3,201      | 2.4           |
| 160        | Upper Potomac     | Potomac                 | Above     | 22,875                       | 53,697     | 2.3           | 6,063         | 20,421     | 2.6           | 8             | 19         | 2.3           | 30,968        | 74,037     | 2.4           |
| 170        | Upper Potomac     | Potomac                 | Above     | 0                            | 0          | -             | 3,749         | 8,427      | 2.2           | 20            | 45         | 2.3           | 3,769         | 8,472      | 2.2           |
| 175        | Upper Potomac     | Potomac                 | Above     | 0                            | 0          | -             | 2,137         | 4,920      | 2.3           | 3             | 13         | 4.1           | 2,140         | 4,933      | 2.3           |
| 180        | Mid Potomac       | Potomac                 | Above     | 25,029                       | 59,012     | 2.4           | 7,868         | 20,335     | 2.6           | 20            | 43         | 2.2           | 32,918        | 79,390     | 2.4           |
| 190        | Shenandoah        | Potomac                 | Above     | 30,517                       | 72,926     | 2.4           | 6,347         | 15,734     | 2.5           | 42            | 118        | 2.8           | 38,906        | 88,776     | 2.4           |
| 200        | Shenandoah        | Potomac                 | Above     | 19,367                       | 25,195     | 2.4           | 7,326         | 17,847     | 2.4           | 46            | 77         | 1.7           | 17,769        | 43,119     | 2.4           |
| 210        | Lower Potomac     | Potomac                 | Above     | 29,544                       | 74,818     | 2.5           | 3,900         | 9,696      | 2.5           | 3             | 3          | 1.3           | 33,446        | 84,517     | 2.5           |
| 220        | Lower Potomac     | Potomac                 | Above     | 190,146                      | 513,269    | 2.7           | 3,782         | 10,439     | 2.8           | 16            | 35         | 2.2           | 193,943       | 523,743    | 2.7           |
| 230        | Rappahannock      | Rappahannock            | Above     | 4,838                        | 10,994     | 2.3           | 4,359         | 11,833     | 2.7           | 17            | 21         | 1.2           | 8,914         | 22,847     | 2.4           |
| 235        | Mattaponi         | York                    | Above     | 1,797                        | 5,317      | 3.0           | 594           | 1,820      | 3.1           | 0             | 0          | -             | 2,391         | 7,137      | 3.0           |
| 240        | Mattaponi         | York                    | Above     | 0                            | 0          | -             | 592           | 1,594      | 2.7           | 0             | 0          | -             | 692           | 1,694      | 2.7           |
| 250        | Pamunkey          | York                    | Above     | 124                          | 298        | 2.4           | 520           | 1,326      | 2.6           | 4             | 4          | 0.8           | 649           | 1,626      | 2.5           |
| 260        | Pamunkey          | York                    | Above     | 89                           | 235        | 2.6           | 765           | 2,010      | 2.6           | 5             | 6          | 1.3           | 859           | 2,231      | 2.6           |
| 265        | James             | James                   | Above     | 0                            | 0          | -             | 271           | 649        | 2.4           | 1             | 2          | 1.7           | 272           | 651        | 2.4           |
| 270        | James             | James                   | Above     | 7,833                        | 18,323     | 2.3           | 5,028         | 12,425     | 2.5           | 7             | 19         | 2.5           | 12,669        | 30,767     | 2.4           |
| 280        | James             | James                   | Above     | 47,449                       | 109,975    | 2.3           | 4,231         | 10,690     | 2.5           | 24            | 30         | 1.3           | 51,704        | 120,695    | 2.3           |
| 290        | James             | James                   | Above     | 25,908                       | 62,980     | 2.5           | 494           | 1,415      | 2.9           | 2             | 5          | 2.1           | 26,105        | 64,400     | 2.5           |
| 300        | Appomattox        | Appomattox              | Above     | 1,830                        | 4,453      | 2.4           | 1,579         | 3,843      | 2.5           | 8             | 26         | 3.2           | 3,417         | 8,122      | 2.4           |
| 310        | Appomattox        | Appomattox              | Above     | 245                          | 642        | 2.6           | 75            | 229        | 3.0           | 0             | 1          | -             | 321           | 872        | 2.7           |
| 330        | Patuxent          | Patuxent                | Above     | 5,027                        | 15,094     | 3.0           | 53            | 152        | 2.8           | 1             | 2          | 2.0           | 5,081         | 15,249     | 3.0           |
| 340        | Patuxent          | Patuxent                | Above     | 81,343                       | 220,678    | 2.7           | 354           | 1,316      | 3.7           | 6             | 13         | 2.0           | 81,703        | 222,015    | 2.7           |
| 370        | Bohemia           | Upper Eastern Shore     | Below     | 78                           | 210        | 2.7           | 185           | 485        | 2.6           | 2             | 5          | 2.6           | 264           | 699        | 2.6           |
| 380        | Chester           | Upper Eastern Shore     | Below     | 1,154                        | 2,523      | 2.2           | 2,237         | 5,006      | 2.5           | 25            | 90         | 3.6           | 3,416         | 8,220      | 2.4           |
| 390        | Wye               | Upper Eastern Shore     | Below     | 0                            | 0          | -             | 612           | 1,626      | 2.7           | 3             | 8          | 2.5           | 615           | 1,634      | 2.7           |
| 400        | Lower Choptank    | Upper Eastern Shore     | Below     | 4,837                        | 11,247     | 2.3           | 2,680         | 6,671      | 2.5           | 19            | 66         | 3.4           | 7,537         | 17,945     | 2.4           |
| 410        | Lower Nanticoke   | Lower Eastern Shore     | Below     | 3,248                        | 8,094      | 2.5           | 3,928         | 9,787      | 2.5           | 30            | 76         | 2.5           | 7,206         | 17,957     | 2.5           |
| 420        | Wilcomko          | Lower Eastern Shore     | Below     | 8,272                        | 21,984     | 2.4           | 3,173         | 7,918      | 2.5           | 2             | 7          | 4.2           | 12,447        | 30,161     | 2.4           |
| 430        | Pocomoke          | Lower Eastern Shore     | Below     | 2,736                        | 6,969      | 2.4           | 3,853         | 9,251      | 2.4           | 25            | 69         | 2.7           | 6,614         | 15,969     | 2.4           |
| 440        | Coast 4           | Lower Eastern Shore     | Below     | 0                            | 0          | -             | 1,399         | 3,161      | 2.3           | 11            | 26         | 2.4           | 1,409         | 3,187      | 2.3           |
| 450        | Coast 11          | West Chesapeake         | Below     | 26,065                       | 58,797     | 2.8           | 7,247         | 19,102     | 2.6           | 22            | 80         | 3.7           | 33,333        | 87,978     | 2.6           |
| 470        | Gunpowder         | West Chesapeake         | Below     | 58,521                       | 146,751    | 2.5           | 2,108         | 4,386      | 2.1           | 0             | 0          | -             | 60,629        | 151,138    | 2.5           |
| 480        | Baltimore         | West Chesapeake         | Below     | 219,680                      | 530,931    | 2.5           | 42            | 107        | 2.5           | 0             | 0          | -             | 219,702       | 531,038    | 2.5           |
| 490        | Lower Patapsco    | West Chesapeake         | Below     | 100,314                      | 252,870    | 2.6           | 293           | 654        | 2.2           | 7             | 13         | 1.8           | 100,614       | 253,537    | 2.6           |
| 500        | Patuxent          | Patuxent/Mid Chesapeake | Below     | 39,045                       | 112,197    | 2.9           | 2,267         | 5,749      | 2.5           | 1             | 2          | 2.0           | 41,312        | 118,025    | 2.9           |
| 510        | Severn            | Patuxent/Mid Chesapeake | Below     | 7,939                        | 23,861     | 3.0           | 38            | 91         | 2.4           | 0             | 1          | -             | 7,997         | 23,953     | 3.0           |
| 540        | Anacostia         | Potomac                 | Below     | 238,020                      | 625,596    | 2.6           | 499           | 1,430      | 2.9           | 0             | 0          | -             | 238,519       | 627,033    | 2.6           |
| 550        | Ocoquan           | Potomac                 | Below     | 48,956                       | 258,628    | 3.0           | 3,783         | 11,350     | 3.0           | 3             | 9          | 2.9           | 50,742        | 268,186    | 3.0           |
| 560        | Rappahannock      | Rappahannock            | Below     | 7,163                        | 45,036     | 2.6           | 3,199         | 7,958      | 2.5           | 19            | 40         | 2.2           | 20,381        | 83,035     | 2.6           |

Table 7

Table 7. HOUSING UNITS AND POPULATION USING WASTE DISPOSAL MEANS BY HOUSING UNIT TYPE: MODEL SEGMENT SUMMARY

| Mod Set     | Name              | Sub-basin               | Fall Line | A. HOUSING UNITS USING SEWER |            |                |               |            |                |               |            |                |               |            |                |
|-------------|-------------------|-------------------------|-----------|------------------------------|------------|----------------|---------------|------------|----------------|---------------|------------|----------------|---------------|------------|----------------|
|             |                   |                         |           | URBAN                        |            |                | RURAL         |            |                | FARM          |            |                | ALL           |            |                |
|             |                   |                         |           | HOUSING UNITS                | POPULATION | AVG PERSONS/HU | HOUSING UNITS | POPULATION | AVG PERSONS/HU | HOUSING UNITS | POPULATION | AVG PERSONS/HU | HOUSING UNITS | POPULATION | AVG PERSONS/HU |
| 588         | Great Wicomico    | Rappahannock            | Below     | 0                            | 0          | -              | 137           | 272        | 2.0            | 0             | 1          | -              | 137           | 273        | 2.0            |
| 590         | York              | Rappahannock            | Below     | 7,598                        | 18,020     | 2.4            | 1,039         | 3,414      | 3.2            | 1             | 3          | 1.9            | 8,936         | 21,437     | 2.5            |
| 600         | James             | James                   | Below     | 242,920                      | 613,039    | 2.5            | 7,462         | 19,792     | 2.7            | 24            | 78         | 3.0            | 250,407       | 632,903    | 2.5            |
| 610         | Choptank          | James                   | Below     | 58,075                       | 129,398    | 2.3            | 981           | 2,993      | 3.1            | 2             | 6          | 3.1            | 57,058        | 132,398    | 2.3            |
| 620         | Nansemond         | James                   | Below     | 13,339                       | 37,183     | 2.7            | 164           | 426        | 2.6            | 0             | 0          | -              | 13,703        | 37,688     | 2.7            |
| 630         | Elizabeth         | James                   | Below     | 16,995                       | 44,419     | 2.6            | 0             | 0          | -              | 0             | 0          | -              | 16,995        | 44,419     | 2.6            |
| 700         | East Branch 1     | Susquehanna             | Above     | 916                          | 2,243      | 2.4            | 883           | 2,007      | 2.3            | 1             | 6          | 4.3            | 1,801         | 4,288      | 2.4            |
| 710         | Lower Susquehanna | Susquehanna             | Above     | 19,104                       | 46,844     | 2.5            | 2,898         | 7,358      | 2.5            | 41            | 81         | 2.0            | 22,341        | 56,281     | 2.5            |
| 720         | Conowingo         | Susquehanna             | Above     | 71,732                       | 178,934    | 2.5            | 9,392         | 24,478     | 2.6            | 108           | 603        | 3.6            | 81,190        | 204,038    | 2.5            |
| 730         | Mid Potomac       | Potomac                 | Above     | 9,987                        | 22,915     | 2.3            | 8,423         | 21,819     | 2.6            | 11            | 23         | 2.1            | 18,421        | 44,186     | 2.4            |
| 740         | Mid Potomac       | Potomac                 | Above     | 20,598                       | 47,912     | 2.3            | 11,814        | 30,558     | 2.6            | 25            | 83         | 3.4            | 32,437        | 78,853     | 2.4            |
| 750         | Lower Potomac     | Potomac                 | Above     | 3,369                        | 7,390      | 2.2            | 2,593         | 6,709      | 2.6            | 4             | 5          | 1.4            | 5,966         | 14,104     | 2.4            |
| 760         | Upper Patuxent    | West Chesapeake         | Below     | 13,388                       | 34,702     | 2.6            | 2,408         | 6,178      | 2.5            | 1             | 1          | 1.1            | 15,197        | 40,882     | 2.6            |
| 770         | Upper Choptank    | Upper Eastern Shore     | Below     | 11                           | 24         | 2.2            | 153           | 390        | 2.5            | 1             | 2          | 2.0            | 165           | 416        | 2.5            |
| 780         | Upper Nanlook     | Upper Eastern Shore     | Below     | 0                            | 0          | -              | 198           | 470        | 2.4            | 1             | 1          | -              | 199           | 471        | 2.4            |
| 800         | Coast 1a          | Upper Eastern Shore     | Below     | 805                          | 2,276      | 2.8            | 727           | 1,928      | 2.7            | 1             | 5          | 3.5            | 1,233         | 4,210      | 2.7            |
| 810         | Coast 1b          | Upper Eastern Shore     | Below     | 0                            | 0          | -              | 1,018         | 2,514      | 2.5            | 7             | 24         | 3.3            | 1,025         | 2,538      | 2.5            |
| 820         | Coast 1c          | Upper Eastern Shore     | Below     | 0                            | 0          | -              | 1,674         | 4,216      | 2.5            | 2             | 5          | 2.2            | 1,676         | 4,221      | 2.5            |
| 830         | Coast 1d          | Upper Eastern Shore     | Below     | 3,652                        | 7,675      | 2.2            | 1,839         | 3,994      | 2.2            | 7             | 17         | 2.3            | 5,399         | 11,685     | 2.2            |
| 840         | Coast 1e          | Upper Eastern Shore     | Below     | 804                          | 2,335      | 2.6            | 278           | 642        | 2.3            | 2             | 5          | 2.7            | 1,134         | 2,981      | 2.6            |
| 850         | Coast 6a          | West Chesapeake         | Below     | 12,823                       | 35,849     | 2.8            | 828           | 1,945      | 2.3            | 0             | 0          | -              | 13,341        | 37,894     | 2.8            |
| 860         | Coast 6b          | West Chesapeake         | Below     | 188,487                      | 482,848    | 2.6            | 3             | 7          | 2.8            | 0             | 0          | -              | 188,491       | 482,858    | 2.6            |
| 870         | Coast 6c          | West Chesapeake         | Below     | 12,151                       | 35,434     | 2.9            | 23            | 23         | 1.0            | 0             | 0          | -              | 12,174        | 35,456     | 2.9            |
| 880         | Coast 5           | Patuxent/Mid Chesapeake | Below     | 25,100                       | 61,071     | 2.4            | 1,768         | 4,523      | 2.6            | 3             | 9          | 2.8            | 26,869        | 65,604     | 2.4            |
| 890         | Potomac 1         | Potomac                 | Below     | 231,455                      | 519,172    | 2.2            | 36            | 84         | 2.4            | 0             | 0          | -              | 231,491       | 519,257    | 2.2            |
| 900         | Potomac 2         | Potomac                 | Below     | 330,776                      | 809,182    | 2.4            | 87            | 290        | 3.0            | 0             | 0          | -              | 330,873       | 809,472    | 2.4            |
| 910         | Potomac 3         | Potomac                 | Below     | 112,142                      | 312,010    | 2.8            | 1,520         | 5,288      | 3.3            | 3             | 2          | 0.7            | 113,764       | 317,280    | 2.8            |
| 920         | Potomac 4         | Potomac                 | Below     | 13,338                       | 38,990     | 2.9            | 3,582         | 8,887      | 2.5            | 11            | 33         | 3.0            | 16,928        | 47,869     | 2.8            |
| 930         | Coast 8a          | Rappahannock            | Below     | 0                            | 0          | -              | 319           | 648        | 2.0            | 5             | 9          | 1.8            | 324           | 656        | 2.0            |
| 940         | Coast 8b          | Rappahannock            | Below     | 27                           | 62         | 2.3            | 754           | 1,638      | 2.2            | 3             | 7          | 2.0            | 794           | 1,708      | 2.2            |
| 950         | Coast 8c          | Rappahannock            | Below     | 52,210                       | 138,284    | 2.6            | 739           | 2,227      | 3.0            | 8             | 25         | 3.8            | 52,955        | 140,537    | 2.7            |
| 960         | Coast 9           | James                   | Below     | 231,780                      | 613,502    | 2.6            | 0             | 1          | -              | 0             | 0          | -              | 231,780       | 613,502    | 2.6            |
| 970         | Potomac 5         | Potomac                 | Below     | 8,175                        | 25,313     | 3.1            | 1,139         | 2,581      | 2.2            | 2             | 6          | 3.1            | 9,315         | 27,879     | 3.0            |
| 980         | Potomac 6         | Potomac                 | Below     | 4,143                        | 12,618     | 3.0            | 6,316         | 18,585     | 2.9            | 3             | 4          | 1.5            | 10,462        | 31,208     | 3.0            |
| 990         | Coast 12          | Patuxent/Mid Chesapeake | Below     | 612                          | 1,901      | 3.1            | 177           | 625        | 3.5            | 0             | 0          | -              | 789           | 2,527      | 3.2            |
| (1)         | CHESAPEAKE BAY    |                         |           | 6,384                        | 16,010     | 2.5            | 832           | 1,985      | 2.4            | 2             | 5          | 2.4            | 7,217         | 17,990     | 2.5            |
| (2)         | JAMES RIVER       |                         |           | 2,780                        | 6,934      | 2.5            | 37            | 94         | 2.5            | 0             | 0          | -              | 2,797         | 7,028      | 2.6            |
| (3)         | PATUXENT RIVER    |                         |           | 4                            | 12         | 3.4            | 12            | 26         | 2.2            | 0             | 0          | -              | 16            | 38         | 2.4            |
| (4)         | POTOMAC RIVER     |                         |           | 2,017                        | 4,482      | 2.2            | 81            | 223        | 2.8            | 0             | 0          | -              | 2,098         | 4,685      | 2.2            |
| (5)         | RAPPAHANNOCK      |                         |           | 161                          | 388        | 2.4            | 38            | 78         | 2.2            | 0             | 0          | -              | 197           | 464        | 2.4            |
| (6)         | YORK RIVER        |                         |           | 62                           | 183        | 3.1            | 2             | 6          | 2.8            | 0             | 0          | -              | 56            | 169        | 3.1            |
| Grand Total |                   |                         |           | 3,837,550                    | 9,185,018  | 2.3            | 317,179       | 825,592    | 2.5            | 1,185         | 3,150      | 2.7            | 3,965,603     | 10,014,182 | 2.5            |

1 Note: These numbers are derived from statistical estimates. They are shown rounded to the nearest whole number. Persons per HU are calculated from numbers to the third decimal place.

Table 7. HOUSING UNITS AND POPULATION USING WASTE DISPOSAL MEANS BY HOUSING UNIT TYPE: MODEL SEGMENT SUMMARY

| Mod Seg | Name              | Sub-basin               | Fall Line | 3. HOUSING UNITS USING SEPTIC SYSTEMS |            |                |               |            |                |               |            |                |               |            |                |
|---------|-------------------|-------------------------|-----------|---------------------------------------|------------|----------------|---------------|------------|----------------|---------------|------------|----------------|---------------|------------|----------------|
|         |                   |                         |           | URBAN                                 |            |                | RURAL         |            |                | FARM          |            |                | ALL           |            |                |
|         |                   |                         |           | HOUSING UNITS                         | POPULATION | AVG PERSONS/HU | HOUSING UNITS | POPULATION | AVG PERSONS/HU | HOUSING UNITS | POPULATION | AVG PERSONS/HU | HOUSING UNITS | POPULATION | AVG PERSONS/HU |
| 10      | East Branch 1     | Susquehanna             | Above     | 4,838                                 | 12,985     | 2.7            | 32,501        | 93,370     | 2.9            | 1,355         | 4,783      | 3.1            | 38,692        | 111,069    | 2.8            |
| 20      | East Branch 1     | Susquehanna             | Above     | 6,611                                 | 18,815     | 2.8            | 77,833        | 218,008    | 2.8            | 3,032         | 9,344      | 3.1            | 57,478        | 248,167    | 2.8            |
| 30      | East Branch 2     | Susquehanna             | Above     | 3,304                                 | 9,255      | 2.8            | 30,993        | 87,138     | 2.8            | 1,125         | 3,362      | 3.0            | 35,422        | 99,787     | 2.8            |
| 40      | East Branch 2     | Susquehanna             | Above     | 2,191                                 | 6,118      | 2.8            | 33,482        | 91,258     | 2.7            | 1,071         | 3,202      | 3.0            | 36,745        | 100,574    | 2.7            |
| 50      | West Branch       | Susquehanna             | Above     | 168                                   | 581        | 3.3            | 18,509        | 52,118     | 2.8            | 341           | 951        | 2.8            | 19,016        | 53,628     | 2.8            |
| 60      | West Branch       | Susquehanna             | Above     | 1,353                                 | 3,804      | 2.8            | 23,831        | 66,158     | 2.8            | 987           | 2,988      | 3.0            | 26,171        | 72,658     | 2.8            |
| 70      | West Branch       | Susquehanna             | Above     | 2,048                                 | 4,929      | 2.4            | 20,043        | 56,147     | 2.8            | 1,075         | 3,263      | 3.0            | 23,163        | 64,336     | 2.8            |
| 80      | Lower Susquehanna | Susquehanna             | Above     | 1,877                                 | 5,572      | 3.0            | 44,948        | 128,497    | 2.8            | 2,947         | 8,611      | 3.3            | 49,470        | 140,680    | 2.8            |
| 90      | Junista           | Susquehanna             | Above     | 0                                     | 0          | -              | 12,330        | 33,871     | 2.7            | 542           | 1,861      | 3.5            | 12,872        | 35,782     | 2.8            |
| 100     | Junista           | Susquehanna             | Above     | 2,223                                 | 5,777      | 2.6            | 33,529        | 93,634     | 2.8            | 1,783         | 5,517      | 3.1            | 37,535        | 104,828    | 2.8            |
| 110     | Lower Susquehanna | Susquehanna             | Above     | 9,281                                 | 26,362     | 2.8            | 62,392        | 178,055    | 2.9            | 2,301         | 6,662      | 3.1            | 74,474        | 213,085    | 2.8            |
| 120     | Conowingo         | Susquehanna             | Above     | 136                                   | 443        | 3.3            | 9,972         | 30,018     | 3.0            | 337           | 3,552      | 4.2            | 10,945        | 34,014     | 3.1            |
| 140     | Conowingo         | Susquehanna             | Above     | 33                                    | 121        | 3.7            | 9,330         | 27,041     | 2.9            | 564           | 1,981      | 3.5            | 9,928         | 29,143     | 2.9            |
| 160     | Upper Potomac     | Potomac                 | Above     | 1,474                                 | 3,782      | 2.6            | 10,707        | 30,321     | 2.8            | 425           | 1,238      | 2.9            | 12,608        | 35,341     | 2.8            |
| 170     | Upper Potomac     | Potomac                 | Above     | 0                                     | 0          | -              | 5,752         | 15,871     | 2.8            | 589           | 1,535      | 2.6            | 6,341         | 17,406     | 2.7            |
| 175     | Upper Potomac     | Potomac                 | Above     | 0                                     | 0          | -              | 7,372         | 20,007     | 2.7            | 394           | 1,220      | 3.1            | 7,766         | 21,228     | 2.7            |
| 180     | Mid Potomac       | Potomac                 | Above     | 3,629                                 | 9,912      | 2.7            | 18,368        | 47,130     | 2.6            | 1,063         | 3,030      | 2.9            | 21,058        | 60,072     | 2.8            |
| 190     | Shenandoah        | Potomac                 | Above     | 2,614                                 | 6,897      | 2.6            | 24,162        | 66,694     | 2.8            | 1,368         | 4,015      | 3.1            | 26,744        | 78,608     | 2.8            |
| 200     | Shenandoah        | Potomac                 | Above     | 636                                   | 2,110      | 3.3            | 21,152        | 58,291     | 2.8            | 1,522         | 3,788      | 2.5            | 23,310        | 64,197     | 2.8            |
| 210     | Lower Potomac     | Potomac                 | Above     | 5,918                                 | 18,619     | 3.1            | 20,449        | 61,370     | 3.0            | 1,243         | 3,980      | 3.2            | 27,611        | 83,979     | 3.0            |
| 220     | Lower Potomac     | Potomac                 | Above     | 12,799                                | 39,628     | 3.1            | 12,600        | 37,084     | 3.0            | 870           | 2,308      | 2.7            | 26,170        | 79,030     | 3.0            |
| 230     | Rappahannock      | Rappahannock            | Above     | 401                                   | 1,042      | 2.6            | 20,085        | 57,957     | 2.9            | 1,325         | 3,784      | 2.9            | 21,812        | 62,783     | 2.9            |
| 235     | Mattaponi         | York                    | Above     | 279                                   | 782        | 2.8            | 4,216         | 13,214     | 3.1            | 205           | 523        | 2.6            | 4,699         | 14,519     | 3.1            |
| 240     | Mattaponi         | York                    | Above     | 0                                     | 0          | -              | 3,618         | 10,618     | 2.9            | 120           | 309        | 2.6            | 3,737         | 10,827     | 2.9            |
| 250     | Panunkey          | York                    | Above     | 11                                    | 19         | 1.7            | 3,825         | 10,651     | 2.8            | 208           | 535        | 2.6            | 4,045         | 11,206     | 2.8            |
| 260     | Panunkey          | York                    | Above     | 45                                    | 203        | 4.5            | 9,810         | 27,381     | 2.8            | 532           | 1,502      | 2.8            | 10,387        | 29,086     | 2.8            |
| 265     | James             | James                   | Above     | 0                                     | 0          | -              | 502           | 1,360      | 2.7            | 59            | 133        | 2.2            | 562           | 1,493      | 2.7            |
| 270     | James             | James                   | Above     | 113                                   | 283        | 2.5            | 15,879        | 42,235     | 2.7            | 1,000         | 2,804      | 2.8            | 17,093        | 45,322     | 2.7            |
| 280     | James             | James                   | Above     | 11,673                                | 31,945     | 2.7            | 33,226        | 90,966     | 2.7            | 1,473         | 3,734      | 2.5            | 46,372        | 128,665    | 2.7            |
| 290     | James             | James                   | Above     | 1,142                                 | 3,178      | 2.8            | 7,658         | 21,525     | 2.8            | 350           | 879        | 2.5            | 9,151         | 26,679     | 2.8            |
| 300     | Appomattox        | Appomattox              | Above     | 142                                   | 378        | 2.7            | 10,217        | 28,218     | 2.8            | 724           | 1,989      | 2.7            | 11,083        | 30,574     | 2.8            |
| 310     | Appomattox        | Appomattox              | Above     | 8                                     | 22         | 2.8            | 1,642         | 4,854      | 3.0            | 95            | 258        | 2.7            | 1,744         | 5,131      | 2.9            |
| 330     | Patuxent          | Patuxent                | Above     | 1,265                                 | 3,418      | 2.7            | 4,865         | 15,071     | 3.1            | 163           | 432        | 3.5            | 6,313         | 19,110     | 3.0            |
| 340     | Patuxent          | Patuxent                | Above     | 2,569                                 | 7,635      | 3.0            | 3,967         | 12,280     | 3.1            | 155           | 449        | 2.9            | 6,692         | 20,364     | 3.0            |
| 370     | Bovernia          | Upper Eastern Shore     | Below     | 0                                     | 3          | -              | 993           | 2,809      | 2.8            | 63            | 182        | 2.4            | 1,056         | 2,764      | 2.6            |
| 380     | Chester           | Upper Eastern Shore     | Below     | 111                                   | 330        | 3.0            | 5,624         | 15,349     | 2.7            | 577           | 1,523      | 2.6            | 6,313         | 17,202     | 2.7            |
| 390     | Wye               | Upper Eastern Shore     | Below     | 0                                     | 0          | -              | 1,430         | 3,929      | 2.7            | 22            | 277        | 2.3            | 1,852         | 4,206      | 2.7            |
| 400     | Lower Choptank    | Upper Eastern Shore     | Below     | 148                                   | 505        | 3.5            | 7,009         | 19,425     | 2.8            | 788           | 2,053      | 2.7            | 7,923         | 21,963     | 2.8            |
| 410     | Lower Nantlook    | Lower Eastern Shore     | Below     | 418                                   | 1,120      | 2.7            | 14,653        | 40,385     | 2.8            | 1,005         | 2,672      | 2.7            | 16,074        | 44,177     | 2.8            |
| 420     | Wbomoco           | Lower Eastern Shore     | Below     | 162                                   | 565        | 3.5            | 9,820         | 26,269     | 2.7            | 269           | 806        | 3.0            | 10,251        | 27,063     | 2.7            |
| 430     | Pocomoke          | Lower Eastern Shore     | Below     | 38                                    | 185        | 4.8            | 8,555         | 22,523     | 2.6            | 772           | 2,024      | 2.6            | 9,366         | 24,732     | 2.6            |
| 440     | Coast 4           | Lower Eastern Shore     | Below     | 0                                     | 0          | -              | 6,294         | 15,355     | 2.4            | 237           | 682        | 2.9            | 6,532         | 16,017     | 2.5            |
| 450     | Coast 11          | West Chesapeake         | Below     | 4,840                                 | 14,588     | 3.0            | 30,901        | 92,394     | 3.0            | 1,640         | 5,792      | 3.6            | 37,280        | 112,752    | 3.0            |
| 470     | Gunpowder         | West Chesapeake         | Below     | 8,301                                 | 23,453     | 2.8            | 17,999        | 53,346     | 3.0            | 710           | 1,971      | 2.8            | 27,010        | 78,771     | 2.9            |
| 480     | Baltimore         | West Chesapeake         | Below     | 3,117                                 | 9,608      | 3.1            | 2,051         | 6,229      | 3.0            | 30            | 88         | 1.9            | 5,198         | 15,693     | 3.1            |
| 490     | Lower Patuxent    | West Chesapeake         | Below     | 7,647                                 | 22,648     | 3.0            | 1,578         | 4,314      | 2.7            | 29            | 109        | 3.8            | 9,254         | 27,089     | 2.9            |
| 500     | Patuxent          | Patuxent/Mid Chesapeake | Below     | 5,297                                 | 15,608     | 2.9            | 16,731        | 51,784     | 3.1            | 675           | 1,968      | 2.9            | 22,704        | 69,386     | 3.1            |
| 510     | Severn            | Patuxent/Mid Chesapeake | Below     | 3,993                                 | 11,810     | 3.0            | 3,127         | 8,915      | 2.9            | 12            | 33         | 2.8            | 7,131         | 20,758     | 2.9            |
| 540     | Anacostia         | Potomac                 | Below     | 2,481                                 | 7,251      | 2.9            | 487           | 1,932      | 3.1            | 12            | 42         | 3.3            | 2,961         | 8,827      | 3.0            |
| 550     | Osoquan           | Potomac                 | Below     | 2,998                                 | 9,675      | 3.3            | 17,831        | 55,157     | 3.1            | 439           | 1,407      | 3.0            | 21,089        | 66,239     | 3.1            |
| 560     | Rappahannock      | Rappahannock            | Below     | 991                                   | 2,742      | 2.8            | 12,662        | 33,731     | 2.7            | 579           | 1,455      | 2.5            | 14,232        | 37,928     | 2.7            |

Table 7. HOUSING UNITS AND POPULATION USING WASTE DISPOSAL MEANS BY HOUSING UNIT TYPE:<sup>1</sup> MODEL SEGMENT SUMMARY

| Mod<br>Seg | Name              | Sub-basin               | Fall Line | B. HOUSING UNITS USING SEPTIC SYSTEMS |            |                |               |            |                |               |            |                |               |            |                |
|------------|-------------------|-------------------------|-----------|---------------------------------------|------------|----------------|---------------|------------|----------------|---------------|------------|----------------|---------------|------------|----------------|
|            |                   |                         |           | URBAN                                 |            |                | RURAL         |            |                | FARM          |            |                | ALL           |            |                |
|            |                   |                         |           | HOUSING UNITS                         | POPULATION | AVG PERSONS/HU | HOUSING UNITS | POPULATION | AVG PERSONS/HU | HOUSING UNITS | POPULATION | AVG PERSONS/HU | HOUSING UNITS | POPULATION | AVG PERSONS/HU |
| 590        | Great Woomico     | Rappahannock            | Below     | 0                                     | 0          | 0              | 1,073         | 2,680      | 2.5            | 33            | 60         | 2.5            | 1,108         | 2,760      | 2.5            |
| 590        | York              | Rappahannock            | Below     | 4,166                                 | 13,038     | 2.7            | 13,114        | 37,851     | 2.9            | 493           | 1,104      | 2.2            | 18,492        | 51,993     | 2.8            |
| 600        | James             | James                   | Below     | 13,901                                | 36,617     | 2.6            | 20,257        | 57,269     | 2.8            | 520           | 1,316      | 2.5            | 34,678        | 95,223     | 2.7            |
| 610        | Chickahominy      | James                   | Below     | 4,604                                 | 12,177     | 2.6            | 5,852         | 16,254     | 2.8            | 110           | 391        | 3.5            | 10,565        | 28,823     | 2.7            |
| 620        | Nansemond         | James                   | Below     | 4,204                                 | 11,665     | 2.8            | 2,247         | 6,206      | 2.8            | 126           | 370        | 2.9            | 6,678         | 18,461     | 2.8            |
| 630        | Elizabeth         | James                   | Below     | 794                                   | 2,208      | 2.8            | 3             | 9          | 3.2            | 0             | 1          | -              | 797           | 2,219      | 2.8            |
| 700        | East Branch 1     | Susquehanna             | Above     | 1                                     | 3          | 2.4            | 2,747         | 7,996      | 2.9            | 243           | 693        | 2.8            | 2,991         | 8,292      | 2.8            |
| 710        | Lower Susquehanna | Susquehanna             | Above     | 1,520                                 | 3,753      | 2.5            | 10,678        | 30,518     | 2.9            | 641           | 2,230      | 3.5            | 12,639        | 36,501     | 2.9            |
| 720        | Conowingo         | Susquehanna             | Above     | 2,665                                 | 6,442      | 2.4            | 19,615        | 60,076     | 3.1            | 1,617         | 7,690      | 4.8            | 23,317        | 74,265     | 3.2            |
| 730        | Mid Potomac       | Potomac                 | Above     | 181                                   | 456        | 2.5            | 10,154        | 29,129     | 2.9            | 762           | 2,529      | 3.3            | 11,097        | 32,114     | 2.9            |
| 740        | Mid Potomac       | Potomac                 | Above     | 1,154                                 | 3,127      | 2.7            | 30,867        | 87,656     | 2.8            | 1,135         | 3,222      | 2.8            | 33,156        | 94,005     | 2.8            |
| 750        | Lower Potomac     | Potomac                 | Above     | 19                                    | 46         | 2.3            | 4,235         | 12,051     | 2.8            | 275           | 791        | 2.9            | 4,630         | 12,867     | 2.8            |
| 760        | Upper Potomac     | West Chesapeake         | Below     | 2,601                                 | 7,373      | 2.8            | 16,663        | 51,412     | 3.1            | 459           | 1,181      | 2.8            | 19,722        | 59,966     | 3.0            |
| 770        | Upper Choptank    | Upper Eastern Shore     | Below     | 4                                     | 6          | 1.6            | 3,002         | 6,731      | 2.9            | 147           | 462        | 3.1            | 3,152         | 9,199      | 2.9            |
| 780        | Upper Nantuxoke   | Lower Eastern Shore     | Below     | 1                                     | 2          | 2.1            | 1,236         | 3,444      | 2.8            | 126           | 363        | 3.0            | 1,363         | 3,830      | 2.9            |
| 800        | Coast 1a          | Upper Eastern Shore     | Below     | 275                                   | 945        | 3.4            | 3,054         | 8,766      | 2.9            | 77            | 214        | 2.8            | 3,406         | 9,926      | 2.9            |
| 810        | Coast 1b          | Upper Eastern Shore     | Below     | 0                                     | 0          | -              | 2,027         | 5,447      | 2.7            | 185           | 467        | 2.5            | 2,212         | 5,914      | 2.7            |
| 820        | Coast 1c          | Upper Eastern Shore     | Below     | 0                                     | 0          | -              | 3,294         | 9,313      | 2.8            | 44            | 111        | 2.5            | 3,338         | 9,424      | 2.8            |
| 830        | Coast 1d          | Upper Eastern Shore     | Below     | 27                                    | 340        | 2.7            | 3,579         | 8,763      | 2.4            | 223           | 546        | 2.4            | 3,929         | 9,649      | 2.5            |
| 840        | Coast 1e          | Upper Eastern Shore     | Below     | 12                                    | 30         | 2.4            | 2,650         | 6,467      | 2.4            | 119           | 274        | 2.3            | 2,781         | 6,771      | 2.4            |
| 850        | Coast 6a          | West Chesapeake         | Below     | 394                                   | 1,165      | 3.0            | 548           | 1,662      | 3.1            | 0             | 0          | -              | 942           | 2,648      | 3.0            |
| 860        | Coast 6b          | West Chesapeake         | Below     | 1,796                                 | 5,274      | 3.0            | 390           | 974        | 2.5            | 0             | 0          | -              | 2,156         | 6,248      | 2.9            |
| 870        | Coast 6c          | West Chesapeake         | Below     | 7,463                                 | 22,154     | 3.0            | 900           | 2,355      | 2.6            | 0             | 0          | -              | 8,343         | 24,517     | 2.9            |
| 880        | Coast 5           | Patuxent/Mid Chesapeake | Below     | 5,520                                 | 15,651     | 2.8            | 7,264         | 21,463     | 3.1            | 249           | 695        | 2.8            | 13,013        | 36,609     | 3.0            |
| 890        | Potomac 1         | Potomac                 | Below     | 731                                   | 2,331      | 3.2            | 709           | 2,265      | 3.2            | 3             | 13         | 3.9            | 1,443         | 4,606      | 3.2            |
| 900        | Potomac 2         | Potomac                 | Below     | 3,645                                 | 11,015     | 3.0            | 739           | 2,203      | 3.0            | 8             | 37         | 4.6            | 4,392         | 13,255     | 3.0            |
| 910        | Potomac 3         | Potomac                 | Below     | 3,503                                 | 9,695      | 2.8            | 3,637         | 10,448     | 3.0            | 58            | 206        | 3.5            | 7,099         | 20,350     | 2.9            |
| 920        | Potomac 4         | Potomac                 | Below     | 1,503                                 | 4,647      | 3.1            | 16,619        | 50,609     | 3.0            | 760           | 2,662      | 3.5            | 18,662        | 57,918     | 3.1            |
| 930        | Coast 8a          | Rappahannock            | Below     | 0                                     | 0          | -              | 1,280         | 3,016      | 2.4            | 54            | 138        | 2.6            | 1,333         | 3,153      | 2.4            |
| 940        | Coast 8b          | Rappahannock            | Below     | 175                                   | 485        | 2.8            | 9,007         | 23,258     | 2.6            | 225           | 526        | 2.3            | 9,407         | 24,270     | 2.6            |
| 950        | Coast 8c          | Rappahannock            | Below     | 3,818                                 | 9,835      | 2.6            | 1,492         | 3,900      | 2.6            | 5             | 9          | 1.8            | 5,315         | 13,744     | 2.6            |
| 960        | Coast 9           | James                   | Below     | 7,719                                 | 21,263     | 2.7            | 20            | 64         | 3.1            | 2             | 9          | 3.8            | 7,771         | 21,337     | 2.7            |
| 970        | Potomac 5         | Potomac                 | Below     | 214                                   | 706        | 2.9            | 867           | 3,067      | 3.5            | 16            | 45         | 2.8            | 1,147         | 3,818      | 3.3            |
| 980        | Potomac 5         | Potomac                 | Below     | 210                                   | 719        | 3.0            | 12,270        | 35,183     | 2.9            | 362           | 617        | 2.3            | 12,872        | 36,720     | 2.9            |
| 990        | Coast 12          | Patuxent/Mid Chesapeake | Below     | 42                                    | 91         | 2.2            | 619           | 1,616      | 2.6            | 19            | 60         | 3.2            | 679           | 1,769      | 2.6            |
| (1)        | CHEESAPEAKE BAY   |                         |           | 895                                   | 2,476      | 2.8            | 1,934         | 5,023      | 2.6            | 57            | 146        | 2.5            | 2,666         | 7,645      | 2.6            |
| (2)        | JAMES RIVER       |                         |           | 206                                   | 558        | 2.7            | 132           | 356        | 2.7            | 2             | 4          | 2.4            | 339           | 921        | 2.7            |
| (3)        | PATUXENT RIVER    |                         |           | 54                                    | 154        | 2.8            | 115           | 345        | 3.0            | 4             | 12         | 3.1            | 173           | 511        | 3.0            |
| (4)        | POTOMAC RIVER     |                         |           | 33                                    | 96         | 2.9            | 402           | 1,062      | 2.6            | 14            | 36         | 2.6            | 449           | 1,193      | 2.7            |
| (5)        | RAPPAHANNOCK      |                         |           | 12                                    | 30         | 2.4            | 201           | 484        | 2.4            | 5             | 15         | 2.4            | 219           | 529        | 2.4            |
| (6)        | YORK RIVER        |                         |           | 237                                   | 654        | 2.8            | 100           | 277        | 2.8            | 2             | 4          | 2.1            | 359           | 935        | 2.6            |
|            | Grand Total       |                         |           | 193,773                               | 551,783    | 2.8            | 1,020,717     | 2,899,893  | 2.8            | 50,002        | 151,259    | 3.0            | 1,264,491     | 3,603,064  | 2.8            |

<sup>1</sup> Note: These numbers are derived from statistical estimates. They are shown rounded to the nearest whole number. Persons per HU are calculated from numbers to the third decimal place.

Table 7. HOUSING UNITS AND POPULATION USING WASTE DISPOSAL MEANS BY HOUSING UNIT TYPE: MODEL SEGMENT SUMMARY

| Mod<br>Seq | Name              | Sub-basin               | Fall Line | C. HOUSING UNITS USING OTHER MEANS OF DISPOSAL |            |               |               |            |               |               |            |               | TOTAL         |            |               |               |            |               |
|------------|-------------------|-------------------------|-----------|--|------------|---------------|---------------|------------|---------------|---------------|------------|---------------|---------------|------------|---------------|---------------|------------|---------------|
|            |                   |                         |           | URBAN  |            |               | RURAL         |            |               | FARM          |            |               |               |            |               | ALL           |            |               |
|            |                   |                         |           | HOUSING UNITS                                  | POPULATION | AVG PERSONSHU | HOUSING UNITS | POPULATION | AVG PERSONSHU | HOUSING UNITS | POPULATION | AVG PERSONSHU | HOUSING UNITS | POPULATION | AVG PERSONSHU | HOUSING UNITS | POPULATION | AVG PERSONSHU |
| 10         | East Branch 1     | Susquehanna             | Above     | 30   | 149        | 4.9           | 1,185         | 3,343      | 2.8           | 135           | 500        | 3.7           | 1,351         | 3,992      | 2.9           | 84,107        | 221,144    | 2.6           |
| 20         | East Branch 1     | Susquehanna             | Above     | 88   | 270        | 3.1           | 1,919         | 4,958      | 2.6           | 210           | 434        | 2.1           | 2,216         | 5,880      | 2.6           | 184,778       | 477,648    | 2.6           |
| 30         | East Branch 2     | Susquehanna             | Above     | 173  | 516        | 3.0           | 1,205         | 3,498      | 2.9           | 45            | 125        | 2.8           | 1,424         | 4,138      | 2.9           | 151,537       | 364,882    | 2.5           |
| 40         | East Branch 2     | Susquehanna             | Above     | 213  | 632        | 2.9           | 1,105         | 2,832      | 2.5           | 17            | 50         | 3.0           | 1,335         | 3,214      | 2.4           | 140,087       | 344,389    | 2.5           |
| 50         | West Branch       | Susquehanna             | Above     | 0  | 1          | -             | 1,439         | 3,782      | 2.6           | 11            | 36         | 3.2           | 1,450         | 3,798      | 2.6           | 36,888        | 87,177     | 2.6           |
| 60         | West Branch       | Susquehanna             | Above     | 46   | 189        | 4.1           | 1,509         | 4,062      | 2.7           | 37            | 154        | 4.2           | 1,592         | 4,405      | 2.8           | 83,300        | 212,060    | 2.5           |
| 70         | West Branch       | Susquehanna             | Above     | 10   | 37         | 3.8           | 579           | 1,619      | 2.8           | 38            | 143        | 3.8           | 626           | 1,799      | 2.9           | 48,329        | 119,545    | 2.6           |
| 80         | Lower Susquehanna | Susquehanna             | Above     | 147  | 480        | 3.3           | 2,108         | 5,371      | 2.6           | 131           | 688        | 5.2           | 2,378         | 6,639      | 2.7           | 198,652       | 353,197    | 2.5           |
| 90         | Junata            | Susquehanna             | Above     | 0  | 0          | -             | 427           | 972        | 2.3           | 16            | 41         | 2.6           | 443           | 1,013      | 2.3           | 17,484        | 48,204     | 2.8           |
| 100        | Lower Susquehanna | Susquehanna             | Above     | 92   | 181        | 2.0           | 1,545         | 4,105      | 2.7           | 145           | 633        | 4.4           | 1,781         | 4,919      | 2.8           | 95,772        | 248,608    | 2.6           |
| 110        | Lower Susquehanna | Susquehanna             | Above     | 337  | 893        | 2.6           | 1,902         | 4,832      | 2.5           | 68            | 221        | 3.3           | 2,307         | 5,945      | 2.6           | 251,643       | 640,762    | 2.5           |
| 120        | Conowingo         | Susquehanna             | Above     | 6  | 32         | 5.0           | 311           | 853        | 2.7           | 46            | 171        | 3.7           | 363           | 1,058      | 2.9           | 14,685        | 41,991     | 3.0           |
| 130        | Upper Potomac     | Potomac                 | Above     | 0  | 0          | -             | 482           | 1,355      | 2.8           | 38            | 65         | 1.8           | 498           | 1,420      | 2.9           | 11,751        | 31,784     | 2.9           |
| 140        | Upper Potomac     | Potomac                 | Above     | 89   | 147        | 1.7           | 611           | 1,509      | 2.4           | 45            | 79         | 1.8           | 750           | 1,735      | 2.3           | 44,322        | 111,113    | 2.5           |
| 150        | Upper Potomac     | Potomac                 | Above     | 0  | 0          | -             | 951           | 2,410      | 2.5           | 178           | 316        | 1.8           | 1,129         | 2,726      | 2.4           | 11,230        | 21,604     | 2.5           |
| 160        | Mid Potomac       | Potomac                 | Above     | 0  | 0          | -             | 875           | 2,124      | 2.4           | 91            | 183        | 1.9           | 973           | 2,307      | 2.4           | 10,878        | 21,467     | 2.6           |
| 170        | Shenandoah        | Potomac                 | Above     | 30   | 73         | 2.5           | 640           | 1,698      | 2.7           | 54            | 147        | 2.9           | 721           | 1,919      | 2.7           | 54,698        | 141,381    | 2.6           |
| 180        | Shenandoah        | Potomac                 | Above     | 122  | 325        | 2.7           | 1,402         | 3,393      | 2.4           | 102           | 248        | 2.4           | 1,627         | 3,984      | 2.4           | 67,276        | 172,347    | 2.6           |
| 190        | Lower Potomac     | Potomac                 | Above     | 19   | 27         | 1.4           | 1,594         | 3,999      | 2.5           | 125           | 211        | 1.7           | 1,738         | 4,236      | 2.4           | 42,817        | 111,853    | 2.6           |
| 200        | Lower Potomac     | Potomac                 | Above     | 152  | 407        | 2.7           | 783           | 2,178      | 2.9           | 4             | 8          | 2.1           | 919           | 2,894      | 2.8           | 61,976        | 171,090    | 2.8           |
| 210        | Rappahannock      | Rappahannock            | Above     | 296  | 1,031      | 3.5           | 337           | 1,008      | 3.0           | 19            | 39         | 2.1           | 652           | 2,078      | 3.2           | 220,764       | 604,851    | 2.7           |
| 220        | Nattaponi         | York                    | Above     | 31   | 150        | 4.9           | 1,451         | 4,855      | 3.2           | 90            | 245        | 2.8           | 1,575         | 5,050      | 3.2           | 32,300        | 90,680     | 2.8           |
| 230        | Nattaponi         | York                    | Above     | 5  | 9          | 1.8           | 203           | 593        | 2.9           | 6             | 7          | 1.1           | 214           | 609        | 2.9           | 7,304         | 22,286     | 3.0           |
| 240        | Pamunkey          | York                    | Above     | 0  | 0          | -             | 355           | 950        | 2.7           | 10            | 18         | 1.7           | 306           | 968        | 2.6           | 4,895         | 13,390     | 2.9           |
| 250        | Pamunkey          | York                    | Above     | 0  | 1          | -             | 314           | 889        | 2.8           | 20            | 39         | 2.0           | 333           | 929        | 2.8           | 5,027         | 13,763     | 2.7           |
| 260        | James             | James                   | Above     | 2  | 5          | 2.4           | 814           | 2,408      | 3.0           | 33            | 62         | 1.9           | 848           | 2,474      | 2.9           | 12,084        | 33,812     | 2.8           |
| 270        | James             | James                   | Above     | 0  | 0          | -             | 159           | 385        | 2.4           | 18            | 29         | 1.6           | 177           | 414        | 2.3           | 1,011         | 2,558      | 2.5           |
| 280        | James             | James                   | Above     | 23   | 57         | 2.4           | 1,714         | 3,905      | 2.3           | 93            | 204        | 2.2           | 1,831         | 4,166      | 2.3           | 31,782        | 80,256     | 2.5           |
| 290        | James             | James                   | Above     | 123  | 456        | 3.7           | 2,477         | 6,941      | 2.8           | 171           | 321        | 1.9           | 2,770         | 7,718      | 2.8           | 100,847       | 259,076    | 2.5           |
| 300        | Appomattox        | Appomattox              | Above     | 12   | 36         | 3.1           | 399           | 1,204      | 3.0           | 8             | 14         | 1.9           | 418           | 1,254      | 3.0           | 35,674        | 91,233     | 2.6           |
| 310        | Appomattox        | Appomattox              | Above     | 10   | 25         | 2.5           | 762           | 2,280      | 3.0           | 57            | 162        | 2.9           | 828           | 2,468      | 3.0           | 15,329        | 41,184     | 2.7           |
| 320        | Patuxent          | Patuxent                | Above     | 0  | 0          | -             | 69            | 197        | 2.9           | 4             | 14         | 3.4           | 73            | 211        | 2.9           | 2,138         | 6,214      | 2.9           |
| 330        | Patuxent          | Patuxent                | Above     | 11   | 42         | 4.0           | 68            | 202        | 2.9           | 0             | 0          | -             | 78            | 244        | 3.1           | 11,473        | 34,312     | 3.0           |
| 340        | Patuxent          | Patuxent                | Above     | 99   | 292        | 2.9           | 81            | 202        | 2.5           | 0             | 0          | -             | 181           | 494        | 2.7           | 88,575        | 242,173    | 2.7           |
| 350        | Bohemia           | Upper Eastern Shore     | Below     | 0  | 0          | -             | 18            | 41         | 2.3           | 1             | 1          | -             | 19            | 42         | 2.3           | 1,339         | 3,505      | 2.6           |
| 360        | Chester           | Upper Eastern Shore     | Below     | 6  | 15         | 2.5           | 284           | 653        | 2.5           | 14            | 26         | 1.9           | 284           | 694        | 2.4           | 10,012        | 28,118     | 2.6           |
| 370        | Wye               | Upper Eastern Shore     | Below     | 0  | 0          | -             | 55            | 142        | 2.6           | 1             | 2          | 1.4           | 66            | 143        | 2.5           | 2,224         | 5,984      | 2.7           |
| 380        | Lower Nanticoke   | Lower Eastern Shore     | Below     | 10   | 28         | 2.8           | 321           | 832        | 2.6           | 19            | 40         | 2.1           | 350           | 898        | 2.8           | 15,811        | 40,886     | 2.6           |
| 390        | Wicomico          | Lower Eastern Shore     | Below     | 27   | 100        | 3.7           | 547           | 1,454      | 2.7           | 57            | 179        | 3.2           | 631           | 1,733      | 2.7           | 23,911        | 63,686     | 2.7           |
| 400        | Pocomoke          | Lower Eastern Shore     | Below     | 16   | 75         | 4.7           | 190           | 424        | 2.2           | 13            | 38         | 2.9           | 218           | 535        | 2.5           | 22,916        | 58,259     | 2.5           |
| 410        | Coast 4           | Lower Eastern Shore     | Below     | 3  | 8          | 3.2           | 375           | 860        | 2.3           | 47            | 134        | 2.9           | 425           | 1,002      | 2.4           | 18,404        | 41,724     | 2.5           |
| 420        | Coast 11          | West Chesapeake         | Below     | 0  | 0          | -             | 700           | 1,808      | 2.6           | 49            | 155        | 3.2           | 749           | 1,961      | 2.6           | 6,890         | 21,193     | 2.4           |
| 430        | Gonpowder         | West Chesapeake         | Below     | 96   | 171        | 1.8           | 782           | 2,274      | 2.9           | 34            | 146        | 4.3           | 912           | 2,591      | 2.8           | 71,525        | 203,321    | 2.8           |
| 440        | Baltimore         | West Chesapeake         | Below     | 152  | 493        | 3.2           | 327           | 989        | 3.0           | 2             | 1          | 0.1           | 481           | 1,483      | 3.1           | 88,120        | 231,382    | 2.8           |
| 450        | Lower Patuxent    | West Chesapeake         | Below     | 1,917  | 6,881      | 3.6           | 27            | 90         | 3.3           | 0             | 0          | -             | 1,944         | 6,951      | 3.6           | 228,845       | 573,862    | 2.8           |
| 460        | Lower Patuxent    | West Chesapeake         | Below     | 423  | 1,408      | 3.3           | 34            | 73         | 2.1           | 0             | 0          | -             | 457           | 1,479      | 3.2           | 110,325       | 292,064    | 2.8           |
| 470        | Patuxent          | Patuxent/Mid Chesapeake | Below     | 147  | 436        | 3.0           | 579           | 1,579      | 2.7           | 47            | 178        | 3.1           | 773           | 2,194      | 2.8           | 64,788        | 189,604    | 2.8           |
| 480        | Severn            | Patuxent/Mid Chesapeake | Below     | 73   | 212        | 2.9           | 42            | 94         | 2.2           | 0             | 1          | -             | 115           | 307        | 2.7           | 15,243        | 45,011     | 3.0           |
| 490        | Arnoctia          | Potomac                 | Below     | 775  | 2,524      | 3.3           | 1             | 3          | -             | 0             | 0          | -             | 776           | 2,527      | 3.3           | 242,276       | 638,386    | 2.6           |
| 500        | Ocoquan           | Potomac                 | Below     | 134  | 411        | 3.1           | 401           | 1,322      | 3.3           | 11            | 28         | 2.4           | 546           | 1,760      | 3.2           | 112,387       | 336,185    | 3.0           |
| 510        | Rappahannock      | Rappahannock            | Below     | 16   | 29         | 1.8           | 982           | 2,517      | 2.6           | 84            | 233        | 2.8           | 1,082         | 2,780      | 2.6           | 35,696        | 93,742     | 2.6           |

Table 7

Table 7. HOUSING UNITS AND POPULATION USING WASTE DISPOSAL MEANS BY HOUSING UNIT TYPE: MODEL SEGMENT SUMMARY

| Mod<br>Seg | Name              | Sub-basin               | Fall Line | C. HOUSING UNITS USING OTHER MEANS OF DISPOSAL |            |                |               |            |                |               |            |                | TOTAL         |            |                |               |            |                |
|------------|-------------------|-------------------------|-----------|--|------------|----------------|---------------|------------|----------------|---------------|------------|----------------|---------------|------------|----------------|---------------|------------|----------------|
|            |                   |                         |           | URBAN  |            |                | RURAL         |            |                | FARM          |            |                |               |            |                | ALL           |            |                |
|            |                   |                         |           | HOUSING UNITS                                  | POPULATION | AVG PERSONS/HU | HOUSING UNITS | POPULATION | AVG PERSONS/HU | HOUSING UNITS | POPULATION | AVG PERSONS/HU | HOUSING UNITS | POPULATION | AVG PERSONS/HU | HOUSING UNITS | POPULATION | AVG PERSONS/HU |
| 580        | Great Wicomico    | Rappahannock            | Below     | 0  | 0          | -              | 88            | 198        | 2.2            | 5             | 13         | 2.7            | 93            | 211        | 2.3            | 1,338         | 3,244      | 2.4            |
| 590        | York              | Rappahannock            | Below     | 88   | 175        | 2.0            | 655           | 1,927      | 2.9            | 36            | 137        | 3.8            | 778           | 2,238      | 2.9            | 27,930        | 75,668     | 2.7            |
| 600        | James             | James                   | Below     | 723  | 1,986      | 2.7            | 719           | 1,993      | 2.8            | 11            | 25         | 2.2            | 1,453         | 4,004      | 2.8            | 286,531       | 732,130    | 2.6            |
| 610        | Chickahominy      | James                   | Below     | 115  | 244        | 2.1            | 206           | 559        | 2.7            | 0             | 0          | -              | 321           | 804        | 2.5            | 67,944        | 162,023    | 2.4            |
| 620        | Nansemond         | James                   | Below     | 303  | 977        | 3.2            | 90            | 254        | 2.8            | 14            | 33         | 2.3            | 407           | 1,263      | 3.1            | 20,787        | 67,312     | 2.8            |
| 630        | Elizabeth         | James                   | Below     | 15   | 45         | 3.0            | 0             | 0          | -              | 0             | 0          | -              | 15            | 45         | 3.0            | 17,707        | 46,683     | 2.6            |
| 700        | East Branch 1     | Susquehanna             | Above     | 0  | 0          | -              | 126           | 333        | 2.7            | 9             | 20         | 2.3            | 134           | 354        | 2.6            | 4,926         | 12,901     | 2.6            |
| 710        | Lower Susquehanna | Susquehanna             | Above     | 44   | 111        | 2.5            | 311           | 861        | 2.8            | 25            | 82         | 3.3            | 390           | 1,053      | 2.8            | 35,361        | 93,835     | 2.7            |
| 720        | Conowingo         | Susquehanna             | Above     | 236  | 1,209      | 5.1            | 690           | 1,769      | 2.6            | 156           | 769        | 4.9            | 1,042         | 3,767      | 3.6            | 105,649       | 282,068    | 2.7            |
| 730        | Mid Potomac       | Potomac                 | Above     | 0  | 0          | -              | 455           | 1,062      | 2.4            | 34            | 95         | 2.7            | 490           | 1,177      | 2.4            | 30,008        | 77,447     | 2.6            |
| 740        | Mid Potomac       | Potomac                 | Above     | 36   | 87         | 2.4            | 1,602         | 4,141      | 2.6            | 87            | 178        | 2.1            | 1,725         | 4,408      | 2.6            | 67,318        | 176,994    | 2.6            |
| 750        | Lower Potomac     | Potomac                 | Above     | 0  | 0          | -              | 167           | 403        | 2.4            | 10            | 22         | 2.3            | 177           | 426        | 2.4            | 10,672        | 27,417     | 2.6            |
| 760        | Upper Patuxent    | West Chesapeake         | Below     | 35   | 100        | 2.9            | 387           | 1,058      | 2.7            | 0             | 0          | -              | 422           | 1,158      | 2.7            | 35,942        | 102,005    | 2.8            |
| 770        | Upper Choptank    | Upper Eastern Shore     | Below     | 0  | 0          | -              | 79            | 231        | 2.9            | 5             | 17         | 3.5            | 85            | 249        | 2.9            | 3,402         | 9,864      | 2.9            |
| 780        | Upper Nantuxent   | Lower Eastern Shore     | Below     | 0  | 0          | -              | 23            | 64         | 2.8            | 4             | 13         | 3.5            | 27            | 77         | 2.9            | 1,566         | 4,379      | 2.8            |
| 800        | Coast 1a          | Upper Eastern Shore     | Below     | 9  | 30         | 3.2            | 89            | 223        | 2.5            | 1             | 2          | -              | 99            | 255        | 2.6            | 5,038         | 14,390     | 2.9            |
| 810        | Coast 1b          | Upper Eastern Shore     | Below     | 0  | 0          | -              | 119           | 291        | 2.4            | 3             | 6          | 1.8            | 122           | 297        | 2.4            | 3,300         | 8,749      | 2.6            |
| 820        | Coast 1c          | Upper Eastern Shore     | Below     | 0  | 0          | -              | 75            | 192        | 2.6            | 0             | 0          | -              | 75            | 193        | 2.6            | 5,090         | 13,837     | 2.7            |
| 830        | Coast 1d          | Upper Eastern Shore     | Below     | 12   | 31         | 2.6            | 73            | 156        | 2.1            | 1             | 3          | 1.9            | 87            | 190        | 2.2            | 8,415         | 21,524     | 2.5            |
| 840        | Coast 1e          | Upper Eastern Shore     | Below     | 0  | 0          | -              | 298           | 596        | 2.0            | 10            | 27         | 2.6            | 298           | 613        | 2.1            | 4,263         | 10,366     | 2.4            |
| 850        | Coast 6a          | West Chesapeake         | Below     | 12   | 17         | 1.5            | 46            | 166        | 3.6            | 0             | 0          | -              | 57            | 184        | 3.2            | 14,351        | 40,925     | 2.8            |
| 860        | Coast 6b          | West Chesapeake         | Below     | 976  | 3,857      | 3.9            | 10            | 28         | 2.7            | 0             | 0          | -              | 988           | 3,585      | 3.6            | 191,634       | 492,389    | 2.6            |
| 870        | Coast 6c          | West Chesapeake         | Below     | 42   | 41         | 3.4            | 9             | 26         | 3.1            | 0             | 0          | -              | 50            | 168        | 3.3            | 20,867        | 60,141     | 2.9            |
| 880        | Coast 5           | Patuxent/Mid Chesapeake | Below     | 214  | 435        | 2.0            | 211           | 543        | 2.6            | 17            | 73         | 4.3            | 442           | 1,052      | 2.4            | 40,325        | 105,464    | 2.6            |
| 890        | Potomac 1         | Potomac                 | Below     | 677  | 2,433      | 3.6            | 0             | 0          | -              | 0             | 0          | -              | 677           | 2,433      | 3.6            | 233,611       | 526,298    | 2.3            |
| 900        | Potomac 2         | Potomac                 | Below     | 569  | 2,184      | 3.8            | 14            | 22         | 1.6            | 0             | 0          | -              | 582           | 2,206      | 3.8            | 335,847       | 824,934    | 2.5            |
| 910        | Potomac 3         | Potomac                 | Below     | 568  | 1,572      | 2.8            | 184           | 528        | 2.9            | 2             | 5          | 2.3            | 752           | 2,103      | 2.8            | 121,614       | 339,733    | 2.8            |
| 920        | Potomac 4         | Potomac                 | Below     | 56   | 169        | 3.0            | 1,107         | 3,286      | 3.0            | 165           | 599        | 3.6            | 1,328         | 4,054      | 3.1            | 37,138        | 109,841    | 3.0            |
| 930        | Coast 3a          | Rappahannock            | Below     | 0  | 0          | -              | 90            | 183        | 2.0            | 7             | 18         | 2.7            | 96            | 201        | 2.1            | 1,753         | 4,011      | 2.3            |
| 940        | Coast 3b          | Rappahannock            | Below     | 3  | 6          | 2.2            | 518           | 1,241      | 2.4            | 22            | 69         | 3.1            | 543           | 1,317      | 2.4            | 10,734        | 27,292     | 2.5            |
| 950        | Coast 3c          | Rappahannock            | Below     | 110  | 413        | 3.8            | 25            | 76         | 3.1            | 1             | 3          | -              | 136           | 493        | 3.6            | 58,408        | 154,773    | 2.6            |
| 960        | Coast 3           | James                   | Below     | 527  | 1,675      | 3.2            | 0             | 1          | -              | 0             | 1          | -              | 527           | 1,676      | 3.2            | 240,079       | 636,715    | 2.7            |
| 970        | Potomac 5         | Potomac                 | Below     | 7  | 21         | 2.9            | 27            | 86         | 3.2            | 0             | 0          | -              | 34            | 107        | 3.1            | 10,498        | 31,604     | 3.0            |
| 980        | Potomac 6         | Potomac                 | Below     | 16   | 38         | 2.4            | 659           | 1,700      | 2.6            | 41            | 170        | 4.2            | 716           | 1,908      | 2.7            | 24,050        | 69,834     | 2.9            |
| 990        | Coast 12          | Patuxent/Mid Chesapeake | Below     | 0  | 0          | -              | 35            | 71         | 2.0            | 5             | 18         | 3.8            | 40            | 89         | 2.2            | 1,507         | 4,364      | 2.9            |
| (1)        | CHESAPEAKE BAY    |                         |           | 25   | 66         | 2.6            | 79            | 179        | 2.3            | 3             | 8          | 2.6            | 107           | 253        | 2.4            | 10,210        | 25,878     | 2.5            |
| (2)        | JAMES RIVER       |                         |           | 7  | 23         | 3.2            | 6             | 17         | 2.7            | 0             | 0          | -              | 13            | 40         | 3.0            | 3,149         | 7,989      | 2.5            |
| (3)        | PATUXENT RIVER    |                         |           | 1  | 2          | 2.3            | 5             | 13         | 2.6            | 0             | 1          | -              | 6             | 17         | 2.6            | 195           | 608        | 2.9            |
| (4)        | POTOMAC RIVER     |                         |           | 16   | 38         | 2.4            | 21            | 50         | 2.4            | 2             | 7          | 3.5            | 39            | 95         | 2.5            | 2,668         | 5,973      | 2.3            |
| (5)        | RAPPAHANNOCK      |                         |           | 1  | 1          | 1.0            | 13            | 29         | 2.2            | 1             | 2          | -              | 15            | 32         | 2.2            | 430           | 1,026      | 2.4            |
| (6)        | YORK RIVER        |                         |           | 4  | 8          | 2.0            | 7             | 20         | 2.8            | 0             | 1          | -              | 11            | 29         | 2.6            | 425           | 1,134      | 2.7            |
|            | Grand Total       |                         |           | 11,404   | 37,125     | 3.3            | 46,647        | 124,247    | 2.7            | 3,120         | 9,182      | 2.9            | 61,172        | 170,558    | 2.8            | 5,291,268     | 13,787,782 | 2.6            |

1 Note: These numbers are derived from statistical estimates. They are shown rounded to the nearest whole number. Persons per HU are calculated from numbers to the third decimal place.

Table 8. All Housing Units, Population and Persons per Housing Unit Using Sewer, Septic and Other Means of Waste Disposal: County Summaries

| STATE                | FIPS  | COUNTY         | A. HOUSING UNITS |        |       |          |       |        |       |          |       |        |       |          | TOTAL   |
|----------------------|-------|----------------|------------------|--------|-------|----------|-------|--------|-------|----------|-------|--------|-------|----------|---------|
|                      |       |                | Urban            |        |       |          | Rural |        |       |          | Farm  |        |       |          |         |
|                      |       |                | Sewer            | Septic | Other | Subtotal | Sewer | Septic | Other | Subtotal | Sewer | Septic | Other | Subtotal |         |
| DELAWARE             | 10001 | KENT           | 23               | 4      | 0     | 27       | 818   | 4,647  | 86    | 5,552    | 12    | 307    | 11    | 330      | 5,910   |
| DELAWARE             | 10003 | NEW CASTLE     | 391              | 135    | 0     | 526      | 68    | 1,095  | 10    | 1,174    | 1     | 48     | 1     | 50       | 1,750   |
| DELAWARE             | 10005 | SUSSEX         | 3,309            | 416    | 27    | 3,752    | 2,061 | 10,705 | 368   | 13,154   | 14    | 609    | 49    | 672      | 17,579  |
| DISTRICT OF COLUMBIA | 11001 | WASHINGTON     | 247,933          | 503    | 1,198 | 249,535  | 0     | 0      | 0     | 0        | 0     | 0      | 0     | 0        | 249,535 |
| MARYLAND             | 24001 | ALLEGANY       | 19,934           | 847    | 56    | 20,537   | 4,880 | 3,640  | 212   | 8,731    | 4     | 49     | 11    | 64       | 29,632  |
| MARYLAND             | 24003 | ANNE ARUNDEL   | 110,537          | 24,183 | 697   | 135,298  | 1,181 | 11,936 | 240   | 13,357   | 7     | 148    | 15    | 170      | 148,114 |
| MARYLAND             | 24005 | BALTIMORE      | 235,446          | 11,303 | 458   | 247,206  | 1,633 | 18,299 | 314   | 20,446   | 0     | 328    | 0     | 328      | 268,280 |
| MARYLAND             | 24009 | CALVERT        | 66               | 1,925  | 18    | 2,009    | 2,108 | 12,016 | 445   | 14,669   | 2     | 362    | 44    | 408      | 16,968  |
| MARYLAND             | 24011 | CAROLINE       | 1,064            | 85     | 2     | 1,150    | 2,261 | 5,808  | 261   | 8,128    | 15    | 678    | 12    | 705      | 9,983   |
| MARYLAND             | 24013 | CARROLL        | 12,008           | 1,624  | 19    | 14,191   | 3,810 | 22,795 | 563   | 27,128   | 3     | 985    | 0     | 988      | 42,248  |
| MARYLAND             | 24015 | CECIL          | 3,573            | 359    | 39    | 3,971    | 5,541 | 13,014 | 410   | 18,985   | 16    | 542    | 5     | 562      | 23,498  |
| MARYLAND             | 24017 | CHARLES        | 17,885           | 2,144  | 55    | 20,085   | 1,465 | 10,114 | 834   | 12,413   | 8     | 359    | 85    | 452      | 32,930  |
| MARYLAND             | 24019 | DORCHESTER     | 4,711            | 25     | 7     | 4,742    | 1,753 | 4,830  | 439   | 7,023    | 11    | 313    | 28    | 352      | 12,117  |
| MARYLAND             | 24021 | FREDERICK      | 28,809           | 5,974  | 152   | 31,735   | 3,998 | 15,692 | 580   | 19,850   | 0     | 985    | 0     | 985      | 52,570  |
| MARYLAND             | 24023 | GARRETT        | 0                | 0      | 0     | 0        | 283   | 1,307  | 72    | 1,662    | 1     | 81     | 15    | 97       | 1,759   |
| MARYLAND             | 24025 | HARFORD        | 37,310           | 6,939  | 80    | 44,330   | 1,567 | 16,442 | 439   | 18,448   | 0     | 415    | 0     | 415      | 63,193  |
| MARYLAND             | 24027 | HOWARD         | 56,357           | 2,449  | 48    | 58,853   | 494   | 8,540  | 172   | 9,206    | 9     | 269    | 0     | 278      | 68,337  |
| MARYLAND             | 24029 | KENT           | 1,290            | 113    | 6     | 1,409    | 1,636 | 2,808  | 230   | 4,874    | 17    | 391    | 11    | 419      | 6,702   |
| MARYLAND             | 24031 | MONTGOMERY     | 263,798          | 7,023  | 360   | 271,202  | 1,615 | 8,901  | 124   | 10,640   | 9     | 377    | 0     | 386      | 282,228 |
| MARYLAND             | 24033 | PRINCE GEORGES | 248,078          | 5,426  | 729   | 252,233  | 2,031 | 3,415  | 143   | 5,590    | 0     | 188    | 0     | 188      | 258,011 |
| MARYLAND             | 24035 | QUEEN ANNE'S   | 0                | 0      | 0     | 0        | 3,747 | 8,049  | 274   | 12,040   | 19    | 425    | 5     | 449      | 12,489  |
| MARYLAND             | 24037 | SAINT MARY'S   | 4,529            | 2,618  | 36    | 7,184    | 3,426 | 13,734 | 584   | 17,724   | 6     | 493    | 93    | 692      | 25,800  |
| MARYLAND             | 24039 | SOMERSET       | 1,150            | 16     | 0     | 1,167    | 2,080 | 4,233  | 188   | 6,501    | 8     | 287    | 15    | 309      | 7,977   |
| MARYLAND             | 24041 | TALBOT         | 3,831            | 188    | 15    | 4,033    | 2,363 | 5,656  | 131   | 8,150    | 9     | 481    | 3     | 494      | 12,677  |
| MARYLAND             | 24043 | WASHINGTON     | 24,541           | 3,602  | 31    | 28,175   | 2,921 | 12,567 | 517   | 16,004   | 8     | 618    | 57    | 683      | 44,762  |
| MARYLAND             | 24045 | WICOMICO       | 9,375            | 164    | 18    | 9,557    | 3,922 | 13,374 | 295   | 17,591   | 13    | 530    | 23    | 583      | 27,772  |
| MARYLAND             | 24047 | WORCESTER      | 1,612            | 22     | 2     | 1,636    | 927   | 2,360  | 82    | 3,399    | 3     | 214    | 10    | 227      | 5,262   |
| MARYLAND             | 24510 | BALTIMORE CITY | 272,335          | 1,334  | 2,815 | 276,484  | 0     | 0      | 0     | 0        | 0     | 0      | 0     | 0        | 276,484 |
| NEW YORK             | 36003 | ALLEGANY       | 291              | 11     | 0     | 303      | 43    | 913    | 14    | 970      | 0     | 30     | 1     | 31       | 1,304   |
| NEW YORK             | 36007 | BROOME         | 55,540           | 4,893  | 33    | 60,466   | 2,708 | 17,269 | 224   | 20,199   | 0     | 233    | 90    | 283      | 80,948  |
| NEW YORK             | 36011 | CAYUGA         | 0                | 0      | 0     | 0        | 0     | 14     | 0     | 14       | 0     | 1      | 0     | 1        | 16      |
| NEW YORK             | 36015 | CHEMUNG        | 21,298           | 4,594  | 28    | 25,919   | 520   | 7,051  | 90    | 7,661    | 0     | 140    | 28    | 168      | 33,720  |
| NEW YORK             | 36017 | CHEMUNGO       | 3,230            | 39     | 3     | 3,271    | 2,680 | 12,133 | 363   | 15,196   | 3     | 609    | 19    | 632      | 19,099  |
| NEW YORK             | 36023 | CORTLAND       | 7,819            | 418    | 7     | 8,244    | 1,749 | 5,628  | 167   | 7,845    | 1     | 320    | 32    | 354      | 16,443  |
| NEW YORK             | 36025 | DELAWARE       | 1,880            | 30     | 0     | 1,910    | 123   | 3,143  | 74    | 3,340    | 0     | 192    | 11    | 203      | 5,432   |
| NEW YORK             | 36043 | HERKIMER       | 0                | 0      | 0     | 0        | 37    | 1,355  | 11    | 1,404    | 0     | 101    | 1     | 102      | 1,506   |
| NEW YORK             | 36051 | LIVINGSTON     | 0                | 0      | 0     | 0        | 0     | 128    | 3     | 131      | 0     | 3      | 0     | 3        | 134     |
| NEW YORK             | 36053 | MADISON        | 913              | 237    | 12    | 1,162    | 85    | 3,957  | 142   | 4,184    | 0     | 271    | 8     | 279      | 5,625   |
| NEW YORK             | 36065 | ONEIDA EAST    | 63               | 6      | 1     | 69       | 125   | 737    | 7     | 869      | 1     | 45     | 1     | 48       | 985     |
| NEW YORK             | 36067 | ONONDAGA       | 0                | 0      | 0     | 0        | 288   | 708    | 15    | 1,008    | 0     | 34     | 3     | 37       | 1,045   |
| NEW YORK             | 36069 | ONTARIO        | 0                | 0      | 0     | 0        | 1     | 41     | 0     | 42       | 0     | 2      | 0     | 2        | 43      |
| NEW YORK             | 36077 | OTSEGO         | 4,304            | 68     | 3     | 4,375    | 2,631 | 13,573 | 215   | 18,419   | 7     | 640    | 37    | 683      | 21,478  |
| NEW YORK             | 36095 | SCHENECTADY    | 0                | 0      | 0     | 0        | 3     | 371    | 17    | 391      | 0     | 11     | 2     | 13       | 404     |
| NEW YORK             | 36097 | SCHUYLER       | 0                | 0      | 0     | 0        | 15    | 1,328  | 48    | 1,391    | 0     | 46     | 18    | 63       | 1,454   |
| NEW YORK             | 36101 | STEBSEN        | 12,373           | 199    | 0     | 12,572   | 4,381 | 15,184 | 710   | 20,225   | 0     | 769    | 75    | 843      | 33,640  |
| NEW YORK             | 36107 | TIOGA          | 5,631            | 561    | 13    | 6,204    | 1,108 | 10,879 | 264   | 12,250   | 1     | 356    | 28    | 384      | 18,838  |
| NEW YORK             | 36109 | TOMPKINS       | 0                | 0      | 0     | 0        | 205   | 1,824  | 36    | 2,066    | 0     | 62     | 5     | 67       | 2,123   |
| NEW YORK             | 36123 | YATES          | 0                | 0      | 0     | 0        | 2     | 81     | 4     | 87       | 0     | 6      | 0     | 6        | 92      |
| PENNSYLVANIA         | 42001 | ADAMS          | 4,927            | 19     | 0     | 4,946    | 8,567 | 13,049 | 579   | 22,194   | 8     | 890    | 29    | 927      | 28,067  |
| PENNSYLVANIA         | 42009 | BEDFORD        | 1,461            | 0      | 0     | 1,461    | 3,104 | 12,374 | 478   | 15,956   | 7     | 584    | 20    | 612      | 18,030  |
| PENNSYLVANIA         | 42011 | BERKS          | 43               | 0      | 0     | 43       | 490   | 3,803  | 65    | 4,058    | 1     | 216    | 10    | 227      | 4,328   |
| PENNSYLVANIA         | 42013 | BLAIR          | 31,191           | 2,189  | 92    | 33,468   | 5,802 | 10,526 | 356   | 16,485   | 0     | 365    | 14    | 379      | 50,332  |
| PENNSYLVANIA         | 42015 | BRADFORD       | 4,659            | 419    | 18    | 5,096    | 2,819 | 12,932 | 748   | 16,499   | 6     | 848    | 45    | 897      | 21,492  |

TABLE 8

Table 8. All Housing Units, Population and Persons per Housing Unit Using Sewer, Septic and Other Means of Waste Disposal: County Summaries

| STATE        | FIPS  | COUNTY         | A. HOUSING UNITS |        |       |          |        |        |       |          |       |        |       |          | TOTAL   |
|--------------|-------|----------------|------------------|--------|-------|----------|--------|--------|-------|----------|-------|--------|-------|----------|---------|
|              |       |                | Urban            |        |       |          | Rural  |        |       |          | Farm  |        |       |          |         |
|              |       |                | Sewer            | Septic | Other | Subtotal | Sewer  | Septic | Other | Subtotal | Sewer | Septic | Other | Subtotal |         |
| PENNSYLVANIA | 42021 | CAMBRIA        | 1,015            | 0      | 0     | 1,015    | 5,433  | 4,670  | 482   | 10,636   | 13    | 131    | 7     | 152      | 11,802  |
| PENNSYLVANIA | 42023 | CAMERON        | 1,120            | 5      | 0     | 1,125    | 182    | 927    | 154   | 1,263    | 0     | 3      | 0     | 3        | 2,391   |
| PENNSYLVANIA | 42027 | CARBOON        | 0                | 0      | 0     | 0        | 0      | 0      | 0     | 0        | 0     | 0      | 0     | 0        | 0       |
| PENNSYLVANIA | 42029 | CENTRE         | 23,585           | 288    | 0     | 23,873   | 5,068  | 11,754 | 432   | 18,056   | 19    | 715    | 21    | 756      | 42,683  |
| PENNSYLVANIA | 42033 | CHESTER        | 1,588            | 40     | 0     | 1,628    | 667    | 8,134  | 131   | 8,932    | 1     | 361    | 7     | 369      | 8,929   |
| PENNSYLVANIA | 42035 | CLEARFIELD     | 4,053            | 93     | 0     | 4,146    | 4,230  | 12,832 | 818   | 17,881   | 0     | 183    | 0     | 183      | 22,210  |
| PENNSYLVANIA | 42037 | CLINTON        | 3,122            | 6      | 0     | 3,128    | 5,840  | 4,190  | 479   | 10,509   | 15    | 178    | 15    | 207      | 13,844  |
| PENNSYLVANIA | 42041 | COLUMBIA       | 8,267            | 279    | 0     | 8,546    | 1,865  | 12,090 | 332   | 14,307   | 6     | 308    | 11    | 625      | 23,478  |
| PENNSYLVANIA | 42043 | CUMBERLAND     | 46,818           | 1,987  | 61    | 48,867   | 7,557  | 15,584 | 563   | 23,704   | 30    | 347    | 5     | 681      | 73,452  |
| PENNSYLVANIA | 42047 | DAUPHIN        | 70,772           | 2,702  | 268   | 73,739   | 6,013  | 14,463 | 473   | 20,970   | 35    | 520    | 0     | 556      | 95,284  |
| PENNSYLVANIA | 42055 | ELK            | 180              | 0      | 0     | 180      | 493    | 1,697  | 46    | 2,236    | 0     | 2      | 0     | 2        | 2,418   |
| PENNSYLVANIA | 42057 | FRANKLIN       | 14,745           | 251    | 0     | 14,996   | 14,114 | 14,636 | 696   | 29,446   | 25    | 1,154  | 54    | 1,233    | 45,675  |
| PENNSYLVANIA | 42061 | FULTON         | 0                | 0      | 0     | 0        | 1,008  | 3,711  | 145   | 4,862    | 2     | 266    | 9     | 277      | 5,139   |
| PENNSYLVANIA | 42063 | HUNTINGDON     | 3,834            | 0      | 0     | 3,834    | 2,120  | 8,715  | 472   | 11,307   | 2     | 267    | 17    | 286      | 15,527  |
| PENNSYLVANIA | 42065 | INDIANA        | 0                | 0      | 0     | 0        | 60     | 988    | 88    | 1,163    | 0     | 27     | 3     | 30       | 1,193   |
| PENNSYLVANIA | 42067 | JEFFERSON      | 0                | 0      | 0     | 0        | 0      | 1      | 0     | 1        | 0     | 0      | 0     | 1        | 1       |
| PENNSYLVANIA | 42069 | JUNIATA        | 0                | 0      | 0     | 0        | 1,949  | 5,046  | 192   | 7,187    | 7     | 370    | 34    | 411      | 7,598   |
| PENNSYLVANIA | 42071 | LACKAWANNA     | 70,509           | 982    | 93    | 71,583   | 2,970  | 7,901  | 232   | 11,103   | 0     | 163    | 0     | 163      | 82,649  |
| PENNSYLVANIA | 42075 | LANCASTER      | 89,598           | 2,835  | 287   | 92,700   | 14,610 | 38,383 | 1,191 | 54,184   | 246   | 3,482  | 252   | 3,979    | 150,863 |
| PENNSYLVANIA | 42079 | LEBANON        | 16,705           | 1,173  | 59    | 17,937   | 8,301  | 10,290 | 191   | 18,782   | 5     | 556    | 16    | 577      | 37,298  |
| PENNSYLVANIA | 42081 | LUZERNE        | 90,022           | 4,109  | 259   | 94,390   | 10,643 | 17,411 | 570   | 28,624   | 38    | 252    | 0     | 290      | 123,305 |
| PENNSYLVANIA | 42083 | LYCOMING       | 22,868           | 2,973  | 51    | 25,892   | 2,447  | 15,447 | 543   | 18,436   | 0     | 603    | 18    | 621      | 44,949  |
| PENNSYLVANIA | 42087 | MCKEAN         | 0                | 0      | 0     | 0        | 5      | 72     | 1     | 78       | 0     | 1      | 0     | 1        | 78      |
| PENNSYLVANIA | 42093 | MIFFLIN        | 4,207            | 30     | 0     | 4,237    | 5,992  | 6,604  | 363   | 12,978   | 49    | 339    | 75    | 462      | 17,697  |
| PENNSYLVANIA | 42097 | MONTOUR        | 3,201            | 71     | 3     | 3,275    | 313    | 2,658  | 89    | 3,058    | 2     | 203    | 5     | 210      | 6,543   |
| PENNSYLVANIA | 42099 | NORTHUMBERLAND | 20,098           | 152    | 33    | 20,282   | 7,706  | 9,877  | 348   | 17,933   | 12    | 497    | 12    | 521      | 38,736  |
| PENNSYLVANIA | 42105 | PERRY          | 974              | 43     | 0     | 1,017    | 3,517  | 9,237  | 609   | 13,363   | 6     | 582    | 11    | 599      | 14,949  |
| PENNSYLVANIA | 42107 | POTTER         | 0                | 0      | 0     | 0        | 666    | 1,191  | 142   | 2,000    | 2     | 71     | 0     | 73       | 2,073   |
| PENNSYLVANIA | 42109 | SCHUYLKILL     | 8,739            | 68     | 10    | 8,817    | 5,878  | 9,552  | 658   | 15,989   | 19    | 305    | 9     | 334      | 25,139  |
| PENNSYLVANIA | 42111 | SNYDER         | 1,738            | 24     | 0     | 1,762    | 4,205  | 5,881  | 382   | 10,468   | 23    | 428    | 82    | 534      | 12,784  |
| PENNSYLVANIA | 42113 | SOMERSET       | 0                | 0      | 0     | 0        | 9      | 771    | 51    | 831      | 0     | 82     | 4     | 86       | 917     |
| PENNSYLVANIA | 42115 | SULLIVAN       | 0                | 0      | 0     | 0        | 501    | 1,645  | 79    | 2,225    | 2     | 51     | 2     | 55       | 2,280   |
| PENNSYLVANIA | 42117 | SUSQUEHANNA    | 0                | 0      | 0     | 0        | 4,038  | 10,009 | 491   | 14,539   | 4     | 342    | 14    | 359      | 14,898  |
| PENNSYLVANIA | 42119 | TIOGA          | 2,246            | 105    | 5     | 2,355    | 2,505  | 8,946  | 462   | 11,914   | 4     | 675    | 26    | 705      | 14,974  |
| PENNSYLVANIA | 42127 | UNION          | 3,170            | 22     | 0     | 3,192    | 2,663  | 5,320  | 118   | 8,101    | 18    | 357    | 21    | 396      | 11,689  |
| PENNSYLVANIA | 42131 | WAYNE          | 0                | 0      | 0     | 0        | 111    | 323    | 17    | 450      | 0     | 24     | 1     | 25       | 476     |
| PENNSYLVANIA | 42133 | WYOMING        | 0                | 0      | 0     | 0        | 1,903  | 7,684  | 181   | 9,768    | 4     | 225    | 4     | 234      | 10,002  |
| VIRGINIA     | 51001 | YORK           | 66,493           | 5,922  | 108   | 72,524   | 13,458 | 39,703 | 1,307 | 54,466   | 46    | 1,571  | 59    | 1,676    | 128,666 |
| VIRGINIA     | 51003 | ACCOMACK       | 0                | 0      | 0     | 0        | 948    | 4,685  | 527   | 6,140    | 4     | 184    | 36    | 204      | 6,344   |
| VIRGINIA     | 51005 | ALBEMARLE      | 9,077            | 1,527  | 9     | 10,613   | 1,315  | 11,463 | 439   | 13,218   | 9     | 588    | 39    | 604      | 24,433  |
| VIRGINIA     | 51007 | ALLEGHANY      | 0                | 0      | 0     | 0        | 1,889  | 2,678  | 298   | 4,863    | 0     | 78     | 0     | 78       | 4,941   |
| VIRGINIA     | 51009 | AMHERST        | 0                | 0      | 0     | 0        | 275    | 2,396  | 218   | 2,880    | 2     | 213    | 22    | 242      | 3,131   |
| VIRGINIA     | 51011 | APPOMATTOX     | 1,049            | 3,079  | 25    | 4,153    | 746    | 4,340  | 376   | 5,461    | 3     | 193    | 17    | 213      | 9,827   |
| VIRGINIA     | 51013 | ARLINGTON      | 0                | 0      | 0     | 0        | 208    | 2,300  | 91    | 2,599    | 1     | 117    | 4     | 122      | 2,721   |
| VIRGINIA     | 51015 | AUGUSTA        | 78,178           | 239    | 105   | 78,520   | 0      | 0      | 0     | 0        | 0     | 0      | 0     | 0        | 78,520  |
| VIRGINIA     | 51017 | BATH           | 3,009            | 1,245  | 29    | 4,283    | 2,133  | 11,574 | 719   | 14,426   | 13    | 994    | 64    | 1,072    | 19,781  |
| VIRGINIA     | 51019 | BEDFORD        | 0                | 0      | 0     | 0        | 657    | 918    | 236   | 1,811    | 2     | 62     | 20    | 84       | 1,895   |
| VIRGINIA     | 51023 | BOTETFOUR      | 490              | 1,221  | 18    | 1,727    | 97     | 1,433  | 108   | 1,638    | 0     | 47     | 3     | 51       | 3,416   |
| VIRGINIA     | 51029 | BUCKINGHAM     | 0                | 15     | 0     | 15       | 798    | 3,570  | 262   | 4,630    | 0     | 240    | 0     | 240      | 4,869   |
| VIRGINIA     | 51031 | CAMPBELL       | 0                | 0      | 0     | 0        | 328    | 3,466  | 357   | 4,151    | 2     | 170    | 18    | 190      | 4,341   |
| VIRGINIA     | 51033 | CAROLINE       | 511              | 1,627  | 2     | 2,140    | 147    | 2,338  | 51    | 2,536    | 0     | 28     | 0     | 27       | 4,703   |
| VIRGINIA     | 51036 | CHARLES CITY   | 0                | 0      | 0     | 0        | 771    | 5,164  | 483   | 6,418    | 0     | 199    | 14    | 213      | 8,631   |
|              |       |                | 0                | 0      | 0     | 0        | 17     | 1,888  | 211   | 2,116    | 0     | 45     | 0     | 45       | 2,161   |

Table 8. All Housing Units, Population and Persons per Housing Unit Using Sewer, Septic and Other Means of Waste Disposal: County Summaries

| STATE    | FIPS  | COUNTY         | A. HOUSING UNITS |        |       |          |       |        |       |          |       |        |       |          | TOTAL |       |         |
|----------|-------|----------------|------------------|--------|-------|----------|-------|--------|-------|----------|-------|--------|-------|----------|-------|-------|---------|
|          |       |                | Urban            |        |       |          | Rural |        |       |          | Farm  |        |       |          |       |       |         |
|          |       |                | Sewer            | Septic | Other | Subtotal | Sewer | Septic | Other | Subtotal | Sewer | Septic | Other | Subtotal |       |       |         |
| VIRGINIA | 51037 | CHARLOTTE      | 0                | 0      | 0     | 0        | 0     | 0      | 0     | 0        | 0     | 0      | 0     | 0        | 0     | 0     | 0       |
| VIRGINIA | 51041 | CHESTERFIELD   | 52,670           | 8,760  | 158   | 61,588   | 3,033 | 8,627  | 121   | 11,681   | 0     | 172    | 0     | 172      | 0     | 172   | 73,411  |
| VIRGINIA | 51043 | CLARKE         | 994              | 93     | 0     | 1,077    | 210   | 2,481  | 159   | 2,850    | 3     | 291    | 14    | 309      | 4     | 309   | 4,236   |
| VIRGINIA | 51045 | CRAIG          | 0                | 0      | 0     | 0        | 260   | 960    | 99    | 1,358    | 0     | 52     | 0     | 52       | 0     | 52    | 1,411   |
| VIRGINIA | 51049 | CULPEPER       | 3,049            | 309    | 30    | 3,388    | 415   | 5,165  | 482   | 6,042    | 1     | 300    | 27    | 327      | 8     | 327   | 9,757   |
| VIRGINIA | 51049 | CUMBERLAND     | 157              | 36     | 10    | 183      | 39    | 2,074  | 265   | 2,378    | 1     | 219    | 33    | 252      | 2     | 252   | 2,633   |
| VIRGINIA | 51053 | DINWIDDIE      | 1,269            | 42     | 0     | 1,310    | 153   | 1,064  | 38    | 1,255    | 1     | 68     | 3     | 72       | 0     | 72    | 2,637   |
| VIRGINIA | 51057 | ESSEX          | 0                | 0      | 0     | 0        | 890   | 2,217  | 194   | 3,101    | 6     | 129    | 23    | 157      | 0     | 157   | 3,258   |
| VIRGINIA | 51059 | FAIRFAX        | 271,568          | 13,875 | 545   | 286,008  | 1,377 | 4,856  | 68    | 6,301    | 0     | 36     | 0     | 36       | 0     | 36    | 292,345 |
| VIRGINIA | 51081 | FAUCQUIER      | 1,759            | 159    | 2     | 1,980    | 2,597 | 10,783 | 346   | 13,726   | 10    | 788    | 25    | 823      | 0     | 823   | 18,909  |
| VIRGINIA | 51085 | FLUVANNA       | 0                | 0      | 0     | 0        | 964   | 3,129  | 220   | 4,343    | 6     | 152    | 17    | 175      | 0     | 175   | 4,518   |
| VIRGINIA | 51089 | FREDERICK      | 0                | 0      | 0     | 0        | 6,666 | 8,798  | 567   | 16,081   | 30    | 341    | 18    | 369      | 0     | 369   | 16,470  |
| VIRGINIA | 51071 | GILES          | 0                | 0      | 0     | 0        | 3     | 68     | 7     | 96       | 0     | 17     | 0     | 17       | 0     | 17    | 118     |
| VIRGINIA | 51073 | GLOUCESTER     | 414              | 2,909  | 55    | 3,378    | 585   | 6,412  | 411   | 7,407    | 3     | 163    | 15    | 181      | 0     | 181   | 10,966  |
| VIRGINIA | 51075 | GOOCHLAND      | 0                | 0      | 0     | 0        | 233   | 4,103  | 309   | 4,645    | 0     | 235    | 0     | 235      | 0     | 235   | 4,680   |
| VIRGINIA | 51079 | GREENE         | 0                | 0      | 0     | 0        | 496   | 2,939  | 171   | 3,606    | 4     | 120    | 18    | 143      | 0     | 143   | 3,749   |
| VIRGINIA | 51085 | HANOVER        | 6,856            | 3,656  | 61    | 10,614   | 1,522 | 9,497  | 590   | 11,610   | 0     | 404    | 0     | 404      | 0     | 404   | 22,628  |
| VIRGINIA | 51087 | HENRICO        | 79,773           | 3,400  | 116   | 83,289   | 349   | 5,223  | 175   | 5,747    | 6     | 96     | 0     | 102      | 0     | 102   | 89,139  |
| VIRGINIA | 51091 | HIGHLAND       | 0                | 0      | 0     | 0        | 149   | 809    | 135   | 894      | 2     | 148    | 39    | 187      | 0     | 187   | 1,081   |
| VIRGINIA | 51093 | ISLE OF WIGHT  | 1,475            | 230    | 1     | 1,706    | 356   | 3,963  | 123   | 4,442    | 0     | 145    | 9     | 155      | 0     | 155   | 6,302   |
| VIRGINIA | 51097 | JAMES CITY     | 5,788            | 371    | 18    | 6,175    | 3,323 | 3,304  | 80    | 6,707    | 19    | 65     | 2     | 86       | 0     | 86    | 12,966  |
| VIRGINIA | 51099 | KING AND QUEEN | 0                | 0      | 0     | 0        | 11    | 2,026  | 134   | 2,171    | 0     | 147    | 21    | 168      | 0     | 168   | 2,339   |
| VIRGINIA | 51101 | KING GEORGE    | 0                | 0      | 0     | 0        | 1,232 | 3,224  | 145   | 4,601    | 0     | 131    | 4     | 135      | 0     | 135   | 4,735   |
| VIRGINIA | 51101 | KING WILLIAM   | 1,027            | 82     | 0     | 1,102    | 60    | 2,346  | 170   | 2,576    | 0     | 140    | 16    | 156      | 0     | 156   | 3,634   |
| VIRGINIA | 51103 | LANCASTER      | 0                | 0      | 0     | 0        | 559   | 3,651  | 258   | 4,468    | 5     | 82     | 11    | 98       | 0     | 98    | 4,664   |
| VIRGINIA | 51107 | LOUDOUN        | 20,477           | 649    | 15    | 21,041   | 2,104 | 6,283  | 278   | 8,664    | 9     | 751    | 25    | 785      | 0     | 785   | 30,490  |
| VIRGINIA | 51109 | LOUISA         | 0                | 0      | 0     | 0        | 561   | 5,962  | 553   | 7,101    | 8     | 276    | 43    | 326      | 0     | 326   | 7,427   |
| VIRGINIA | 51111 | LUNENBERG      | 0                | 0      | 0     | 0        | 0     | 1      | 0     | 1        | 0     | 0      | 0     | 0        | 0     | 0     | 1       |
| VIRGINIA | 51113 | MADISON        | 0                | 0      | 0     | 0        | 152   | 3,366  | 328   | 3,664    | 0     | 257    | 23    | 280      | 0     | 280   | 4,144   |
| VIRGINIA | 51115 | MATHEWS        | 0                | 0      | 0     | 0        | 189   | 3,102  | 189   | 3,479    | 1     | 46     | 4     | 51       | 0     | 51    | 3,530   |
| VIRGINIA | 51119 | MIDDLESEX      | 0                | 0      | 0     | 0        | 352   | 2,448  | 139   | 3,440    | 0     | 83     | 7     | 90       | 0     | 90    | 3,630   |
| VIRGINIA | 51121 | MONTGOMERY     | 0                | 0      | 0     | 0        | 20    | 161    | 18    | 199      | 0     | 14     | 0     | 14       | 0     | 14    | 214     |
| VIRGINIA | 51125 | NELSON         | 0                | 0      | 0     | 0        | 414   | 3,481  | 680   | 4,676    | 1     | 178    | 52    | 231      | 0     | 231   | 4,607   |
| VIRGINIA | 51127 | NEW KENT       | 0                | 0      | 0     | 0        | 38    | 3,503  | 84    | 3,625    | 0     | 93     | 0     | 93       | 0     | 93    | 3,711   |
| VIRGINIA | 51131 | NORTHAMPTON    | 0                | 0      | 0     | 0        | 740   | 2,223  | 235   | 3,199    | 7     | 115    | 21    | 142      | 0     | 142   | 3,342   |
| VIRGINIA | 51133 | NORTHUMBERLAND | 0                | 0      | 0     | 0        | 311   | 3,688  | 278   | 4,277    | 3     | 186    | 26    | 215      | 0     | 215   | 4,492   |
| VIRGINIA | 51135 | NOTTOWAY       | 359              | 3      | 0     | 362      | 860   | 1,570  | 123   | 2,354    | 4     | 137    | 14    | 155      | 0     | 155   | 2,670   |
| VIRGINIA | 51137 | ORANGE         | 965              | 33     | 0     | 999      | 2,036 | 4,315  | 264   | 6,615    | 7     | 292    | 17    | 316      | 0     | 316   | 7,936   |
| VIRGINIA | 51139 | PAGE           | 1,714            | 129    | 2     | 1,845    | 1,454 | 4,171  | 279   | 5,905    | 13    | 283    | 8     | 305      | 0     | 305   | 8,056   |
| VIRGINIA | 51145 | POWHATAN       | 0                | 0      | 0     | 0        | 61    | 4,317  | 147   | 4,626    | 0     | 146    | 0     | 146      | 0     | 146   | 4,671   |
| VIRGINIA | 51147 | PRINCE EDWARD  | 1,335            | 105    | 1     | 1,441    | 204   | 3,212  | 225   | 3,641    | 1     | 192    | 10    | 204      | 0     | 204   | 6,286   |
| VIRGINIA | 51149 | PRINCE GEORGE  | 1,712            | 228    | 19    | 1,958    | 800   | 1,407  | 61    | 2,267    | 3     | 39     | 1     | 43       | 0     | 43    | 4,264   |
| VIRGINIA | 51153 | PRINCE WILLIAM | 65,379           | 1,128  | 75    | 66,579   | 2,782 | 9,616  | 224   | 12,624   | 4     | 198    | 4     | 206      | 0     | 206   | 69,706  |
| VIRGINIA | 51157 | RAPPAHANNOCK   | 0                | 0      | 0     | 0        | 148   | 1,889  | 197   | 2,333    | 0     | 148    | 15    | 163      | 0     | 163   | 2,496   |
| VIRGINIA | 51159 | RICHMOND       | 0                | 0      | 0     | 0        | 353   | 1,680  | 213   | 2,446    | 11    | 153    | 35    | 199      | 0     | 199   | 2,645   |
| VIRGINIA | 51161 | ROANOKE        | 0                | 0      | 0     | 0        | 4     | 342    | 3     | 350      | 0     | 25     | 0     | 25       | 0     | 25    | 375     |
| VIRGINIA | 51163 | ROCKBRIDGE     | 0                | 0      | 0     | 0        | 1,238 | 5,006  | 578   | 6,824    | 3     | 333    | 42    | 378      | 0     | 378   | 7,202   |
| VIRGINIA | 51165 | ROCKINGHAM     | 1,196            | 69     | 0     | 1,265    | 4,537 | 12,716 | 878   | 18,131   | 28    | 1,239  | 89    | 1,344    | 0     | 1,344 | 20,750  |
| VIRGINIA | 51171 | SHENANDOAH     | 2,667            | 209    | 16    | 2,891    | 2,478 | 5,896  | 665   | 9,010    | 19    | 492    | 41    | 551      | 0     | 551   | 12,452  |
| VIRGINIA | 51177 | SPOTSYLVANIA   | 8,481            | 591    | 6     | 9,078    | 1,937 | 7,279  | 377   | 9,693    | 0     | 268    | 6     | 274      | 0     | 274   | 18,945  |
| VIRGINIA | 51179 | STAFFORD       | 5,715            | 768    | 17    | 6,500    | 5,328 | 7,191  | 288   | 12,806   | 0     | 106    | 3     | 109      | 0     | 109   | 18,415  |
| VIRGINIA | 51181 | SURRY          | 0                | 0      | 0     | 0        | 171   | 848    | 68    | 1,088    | 2     | 73     | 5     | 80       | 0     | 80    | 1,167   |
| VIRGINIA | 51187 | WARREN         | 4,389            | 256    | 2     | 4,647    | 168   | 4,756  | 229   | 5,143    | 0     | 85     | 4     | 89       | 0     | 89    | 9,679   |

Table 8. All Housing Units, Population and Persons per Housing Unit Using Sewer, Septic and Other Means of Waste Disposal: County Summaries

|               |       | A. HOUSING UNITS    |           |         |        |           |         |           |        |           |       |        |       | TOTAL  |           |
|---------------|-------|---------------------|-----------|---------|--------|-----------|---------|-----------|--------|-----------|-------|--------|-------|--------|-----------|
| STATE         | FIPS  | COUNTY              | Urban     |         |        |           | Rural   |           |        |           | Farm  |        |       |        |           |
|               |       |                     | Sewer     | Septic  | Other  | Subtotal  | Sewer   | Septic    | Other  | Subtotal  | Sewer | Septic | Other |        | Subtotal  |
| VIRGINIA      | 51193 | WESTMORELAND        | 1,214     | 98      | 3      | 1,313     | 197     | 3,974     | 356    | 4,627     | 2     | 180    | 35    | 217    | 6,057     |
| VIRGINIA      | 51199 | YORK                | 7,550     | 3,081   | 18     | 10,647    | 1,041   | 2,741     | 29     | 3,810     | 7     | 10     | 1     | 17     | 14,474    |
| VIRGINIA      | 51510 | ALEXANDRIA          | 53,132    | 68      | 81     | 53,280    | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 53,280 |           |
| VIRGINIA      | 51530 | BUENA VISTA         | 1,959     | 75      | 23     | 2,057     | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 2,057  |           |
| VIRGINIA      | 51540 | CHARLOTTESVILLE     | 15,219    | 212     | 34     | 15,466    | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 15,466 |           |
| VIRGINIA      | 51550 | CHESAPEAKE CITY     | 41,506    | 3,098   | 112    | 44,716    | 0       | 23        | 0      | 23        | 0     | 3      | 0     | 3      | 44,742    |
| VIRGINIA      | 51570 | CLIFTON FORGE       | 1,807     | 4       | 0      | 1,811     | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 1,811  |           |
| VIRGINIA      | 51570 | COLONIAL HEIGHTS    | 6,340     | 23      | 0      | 6,363     | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 6,363  |           |
| VIRGINIA      | 51580 | COVINGTON           | 2,535     | 10      | 0      | 2,545     | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 2,545  |           |
| VIRGINIA      | 51600 | FAIRFAX             | 6,843     | 88      | 5      | 6,936     | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 6,936  |           |
| VIRGINIA      | 51610 | FALLS CHURCH        | 4,162     | 8       | 26     | 4,195     | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 4,195  |           |
| VIRGINIA      | 51630 | FREDERICKSBURG      | 7,365     | 77      | 8      | 7,450     | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 7,450  |           |
| VIRGINIA      | 51650 | HAMPTON CITY        | 48,416    | 1,159   | 98     | 49,673    | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 49,673 |           |
| VIRGINIA      | 51670 | HARRISONBURG        | 9,497     | 448     | 16     | 9,962     | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 9,962  |           |
| VIRGINIA      | 51670 | HOPEWELL            | 8,796     | 123     | 94     | 9,014     | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 9,014  |           |
| VIRGINIA      | 51678 | LEXINGTON           | 1,730     | 10      | 0      | 1,740     | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 1,740  |           |
| VIRGINIA      | 51680 | LYNCHBURG           | 21,102    | 4,008   | 35     | 25,143    | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 25,143 |           |
| VIRGINIA      | 51683 | MANASSAS CITY       | 9,157     | 128     | 9      | 9,292     | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 9,292  |           |
| VIRGINIA      | 51685 | MANASSAS PARK CITY  | 2,182     | 0       | 0      | 2,182     | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 2,182  |           |
| VIRGINIA      | 51700 | NEWPORT NEWS CITY   | 62,153    | 1,658   | 143    | 63,952    | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 63,952 |           |
| VIRGINIA      | 51710 | NORFOLK CITY        | 88,572    | 705     | 201    | 89,478    | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 89,478 |           |
| VIRGINIA      | 51730 | PETERSBURG          | 12,405    | 105     | 28     | 12,538    | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 12,538 |           |
| VIRGINIA      | 51735 | POQUOSON            | 2,711     | 1,053   | 5      | 3,769     | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 3,769  |           |
| VIRGINIA      | 51740 | PORTSMOUTH CITY     | 38,274    | 347     | 120    | 38,741    | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 38,741 |           |
| VIRGINIA      | 51780 | RICHMOND CITY       | 83,518    | 1,606   | 211    | 85,337    | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 85,337 |           |
| VIRGINIA      | 51790 | STAUNTON            | 6,741     | 287     | 38     | 7,066     | 4       | 23        | 0      | 27        | 0     | 7      | 0     | 7      | 7,070     |
| VIRGINIA      | 51800 | SUFFOLK CITY        | 7,833     | 4,858   | 328    | 13,019    | 69      | 1,309     | 62     | 1,441     | 0     | 68     | 9     | 76     | 14,630    |
| VIRGINIA      | 51810 | VIRGINIA BEACH CITY | 89,584    | 4,514   | 121    | 94,218    | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 94,218 |           |
| VIRGINIA      | 51820 | WAYNESBORO          | 6,478     | 450     | 36     | 6,965     | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 6,965  |           |
| VIRGINIA      | 51830 | WILLIAMSBURG        | 3,335     | 126     | 7      | 3,468     | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 3,468  |           |
| VIRGINIA      | 51840 | WINCHESTER          | 6,311     | 270     | 0      | 6,581     | 0       | 0         | 0      | 0         | 0     | 0      | 0     | 6,581  |           |
| WEST VIRGINIA | 54003 | BERKELEY            | 6,075     | 265     | 28     | 6,369     | 4,221   | 10,791    | 658    | 15,669    | 3     | 274    | 35    | 312    | 22,350    |
| WEST VIRGINIA | 54023 | GRANT               | 0         | 0       | 0      | 0         | 1,288   | 2,221     | 224    | 3,712     | 4     | 180    | 23    | 212    | 3,924     |
| WEST VIRGINIA | 54025 | GREENBRIAR          | 1         | 0       | 0      | 1         | 0       | 1         | 0      | 1         | 0     | 0      | 0     | 0      | 2         |
| WEST VIRGINIA | 54027 | HAMPSHIRE           | 0         | 0       | 0      | 0         | 1,092   | 4,167     | 593    | 5,852     | 6     | 258    | 68    | 330    | 6,182     |
| WEST VIRGINIA | 54031 | HARDY               | 0         | 0       | 0      | 0         | 1,248   | 2,297     | 441    | 3,986     | 5     | 224    | 71    | 300    | 4,286     |
| WEST VIRGINIA | 54037 | JEFFERSON           | 2,295     | 66      | 0      | 2,362     | 3,120   | 6,959     | 168    | 10,248    | 4     | 287    | 15    | 306    | 12,914    |
| WEST VIRGINIA | 54057 | MINERAL             | 2,941     | 627     | 33     | 3,600     | 2,340   | 3,757     | 119    | 6,217     | 2     | 56     | 6     | 164    | 9,981     |
| WEST VIRGINIA | 54063 | MONROE              | 0         | 0       | 0      | 0         | 17      | 218       | 36     | 269       | 0     | 25     | 1     | 26     | 295       |
| WEST VIRGINIA | 54085 | MORGAN              | 0         | 0       | 0      | 0         | 1,241   | 3,259     | 163    | 4,663     | 3     | 69     | 6     | 68     | 4,731     |
| WEST VIRGINIA | 54071 | PENDELTON           | 0         | 0       | 0      | 0         | 474     | 1,704     | 457    | 2,728     | 5     | 227    | 103   | 335    | 3,060     |
| WEST VIRGINIA | 54075 | POCAHONTAS          | 0         | 0       | 0      | 0         | 0       | 1         | 0      | 1         | 0     | 0      | 0     | 0      | 1         |
| WEST VIRGINIA | 54077 | PRESTON             | 0         | 0       | 0      | 0         | 0       | 15        | 1      | 18        | 0     | 1      | 0     | 1      | 17        |
| WEST VIRGINIA | 54083 | RANDOLPH            | 0         | 0       | 0      | 0         | 6       | 1         | 0      | 7         | 0     | 0      | 0     | 0      | 7         |
| WEST VIRGINIA | 54093 | TUCKER              | 0         | 0       | 0      | 0         | 11      | 2         | 1      | 14        | 0     | 0      | 0     | 0      | 14        |
| Grand Total   |       |                     | 3,637,662 | 193,785 | 11,404 | 3,842,751 | 327,222 | 1,021,630 | 46,681 | 1,395,514 | 1,185 | 50,092 | 3,121 | 54,318 | 5,292,682 |

Table 8. All Housing Units, Population and Persons per Housing Unit Using Sewer, Septic and Other Means of Waste Disposal:

| STATE                | FIPS  | COUNTY          | B. POPULATION |        |        |          |        |        |       |          |       |        |       |          | TOTAL   |
|----------------------|-------|-----------------|---------------|--------|--------|----------|--------|--------|-------|----------|-------|--------|-------|----------|---------|
|                      |       |                 | Urban         |        |        |          | Rural  |        |       |          | Farm  |        |       |          |         |
|                      |       |                 | Sewer         | Septic | Other  | Subtotal | Sewer  | Septic | Other | Subtotal | Sewer | Septic | Other | Subtotal |         |
| DELAWARE             | 10001 | KENT            | 24            | 8      | 0      | 31       | 2,068  | 13,500 | 269   | 15,837   | 21    | 680    | 37    | 838      | 16,826  |
| DELAWARE             | 10003 | NEW CASTLE      | 930           | 498    | 0      | 1,427    | 230    | 3,215  | 22    | 3,487    | 2     | 151    | 4     | 156      | 5,350   |
| DELAWARE             | 10005 | SUSSEX          | 8,212         | 1,122  | 100    | 9,434    | 5,017  | 26,767 | 1,077 | 35,861   | 19    | 1,586  | 167   | 1,774    | 47,069  |
| DISTRICT OF COLUMBIA | 11001 | WASHINGTON      | 560,472       | 1,417  | 4,083  | 565,952  | 0      | 0      | 0     | 0        | 0     | 0      | 0     | 0        | 565,952 |
| MARYLAND             | 24001 | ALLEGANY        | 48,839        | 2,128  | 90     | 48,857   | 12,378 | 8,937  | 480   | 22,775   | 9     | 226    | 25    | 260      | 71,893  |
| MARYLAND             | 24003 | ANNE ARUNDEL    | 299,477       | 71,203 | 1,586  | 372,266  | 2,427  | 35,356 | 541   | 38,324   | 15    | 1,234  | 42    | 1,290    | 411,880 |
| MARYLAND             | 24005 | BALTIMORE       | 585,138       | 30,670 | 1,262  | 618,270  | 3,697  | 53,811 | 977   | 58,486   | 0     | 1,720  | 0     | 1,720    | 678,476 |
| MARYLAND             | 24011 | CALVERT         | 173           | 5,213  | 35     | 5,423    | 5,361  | 37,893 | 1,243 | 44,516   | 7     | 949    | 190   | 1,147    | 51,066  |
| MARYLAND             | 24013 | CAROLINE        | 2,592         | 301    | 4      | 2,896    | 5,560  | 15,448 | 683   | 21,691   | 68    | 1,844  | 22    | 2,034    | 26,831  |
| MARYLAND             | 24015 | CARROLL         | 31,815        | 5,041  | 58     | 36,914   | 9,529  | 68,539 | 1,479 | 80,546   | 3     | 2,922  | 0     | 2,926    | 120,386 |
| MARYLAND             | 24017 | CECIL           | 9,399         | 1,049  | 96     | 10,503   | 14,731 | 37,827 | 1,127 | 53,665   | 47    | 1,420  | 6     | 1,473    | 65,664  |
| MARYLAND             | 24019 | CHARLES         | 53,051        | 6,721  | 184    | 59,956   | 4,517  | 31,535 | 2,697 | 38,739   | 8     | 1,228  | 111   | 1,347    | 100,041 |
| MARYLAND             | 24021 | DORCHESTER      | 11,041        | 60     | 16     | 11,118   | 4,467  | 12,412 | 922   | 17,801   | 33    | 736    | 71    | 840      | 26,756  |
| MARYLAND             | 24022 | FREDERICK       | 63,797        | 18,793 | 396    | 84,986   | 9,277  | 47,510 | 1,755 | 58,542   | 0     | 2,929  | 0     | 2,929    | 148,459 |
| MARYLAND             | 24023 | GARRETT         | 0             | 0      | 0      | 0        | 718    | 3,624  | 172   | 4,714    | 3     | 278    | 28    | 309      | 5,022   |
| MARYLAND             | 24025 | HARFORD         | 102,631       | 20,856 | 126    | 123,613  | 3,647  | 48,921 | 1,335 | 53,903   | 0     | 1,101  | 0     | 1,101    | 178,617 |
| MARYLAND             | 24027 | HOWARD          | 149,032       | 7,129  | 148    | 156,309  | 1,297  | 26,453 | 484   | 28,214   | 16    | 667    | 0     | 683      | 165,406 |
| MARYLAND             | 24029 | KENT            | 2,815         | 336    | 15     | 3,166    | 4,491  | 7,359  | 593   | 12,411   | 62    | 1,062  | 18    | 1,142    | 16,719  |
| MARYLAND             | 24031 | MONTGOMERY      | 693,615       | 20,534 | 1,279  | 715,428  | 4,764  | 27,951 | 382   | 32,798   | 18    | 1,073  | 0     | 1,091    | 749,315 |
| MARYLAND             | 24033 | PRINCE GEORGE'S | 677,748       | 15,632 | 2,205  | 695,585  | 6,663  | 9,739  | 358   | 16,700   | 0     | 601    | 0     | 601      | 712,887 |
| MARYLAND             | 24035 | QUEEN ANNE'S    | 0             | 0      | 0      | 0        | 9,467  | 22,315 | 686   | 32,469   | 62    | 1,102  | 8     | 1,172    | 33,641  |
| MARYLAND             | 24037 | SANT MARY'S     | 12,721        | 7,653  | 80     | 20,454   | 8,475  | 40,491 | 1,424 | 60,389   | 28    | 1,848  | 536   | 2,412    | 73,255  |
| MARYLAND             | 24039 | SOMERSET        | 2,800         | 60     | 3      | 2,863    | 4,830  | 10,806 | 365   | 16,033   | 26    | 788    | 40    | 856      | 19,743  |
| MARYLAND             | 24041 | TALBOT          | 8,403         | 646    | 39     | 8,991    | 5,242  | 14,443 | 269   | 19,863   | 22    | 1,134  | 6     | 1,161    | 30,136  |
| MARYLAND             | 24043 | WASHINGTON      | 57,046        | 9,587  | 80     | 66,715   | 7,721  | 36,037 | 1,339 | 45,096   | 27    | 1,417  | 182   | 1,699    | 113,409 |
| MARYLAND             | 24045 | WICOMICO        | 22,198        | 569    | 77     | 22,842   | 9,741  | 36,010 | 646   | 46,399   | 42    | 1,676  | 64    | 1,781    | 71,022  |
| MARYLAND             | 24047 | WORCESTER       | 3,940         | 137    | 5      | 4,084    | 2,278  | 6,292  | 215   | 8,786    | 9     | 527    | 26    | 562      | 13,432  |
| MARYLAND             | 24510 | BALTIMORE CITY  | 699,669       | 5,392  | 10,437 | 715,477  | 0      | 0      | 0     | 0        | 0     | 0      | 0     | 0        | 715,477 |
| NEW YORK             | 36003 | ALLEGANY        | 629           | 320    | 0      | 948      | 43     | 2,124  | 35    | 2,203    | 0     | 84     | 3     | 87       | 3,239   |
| NEW YORK             | 36007 | BROOME          | 130,645       | 13,389 | 91     | 144,025  | 6,569  | 50,944 | 368   | 57,011   | 0     | 714    | 136   | 850      | 201,856 |
| NEW YORK             | 36011 | CAYUGA          | 0             | 0      | 0      | 0        | 1      | 46     | 0     | 46       | 0     | 4      | 0     | 4        | 50      |
| NEW YORK             | 36015 | CHEMUNG         | 51,945        | 11,973 | 146    | 64,065   | 1,231  | 20,178 | 232   | 21,641   | 0     | 349    | 65    | 413      | 66,119  |
| NEW YORK             | 36017 | CHEMUNGO        | 7,305         | 102    | 6      | 7,413    | 8,377  | 34,152 | 1,044 | 41,573   | 8     | 1,723  | 31    | 1,762    | 50,748  |
| NEW YORK             | 36023 | CORTLAND        | 18,948        | 1,043  | 23     | 20,013   | 4,183  | 17,367 | 473   | 22,046   | 5     | 1,056  | 58    | 1,119    | 43,179  |
| NEW YORK             | 36025 | DELAWARE        | 4,005         | 64     | 0      | 4,069    | 304    | 8,142  | 179   | 8,925    | 0     | 547    | 25    | 572      | 14,196  |
| NEW YORK             | 36043 | HERKIMER        | 0             | 0      | 0      | 0        | 88     | 3,821  | 31    | 3,941    | 0     | 329    | 2     | 331      | 4,272   |
| NEW YORK             | 36051 | LIVINGSTON      | 0             | 0      | 0      | 0        | 0      | 352    | 5     | 358      | 0     | 8      | 0     | 8        | 366     |
| NEW YORK             | 36053 | MADISON         | 2,257         | 1,464  | 53     | 3,774    | 163    | 10,282 | 347   | 10,792   | 0     | 631    | 14    | 645      | 15,411  |
| NEW YORK             | 36065 | ONEIDA EAST     | 171           | 16     | 2      | 192      | 311    | 2,196  | 20    | 2,528    | 2     | 126    | 2     | 130      | 2,850   |
| NEW YORK             | 36067 | ONONDAGA        | 0             | 0      | 0      | 0        | 751    | 1,868  | 40    | 2,779    | 0     | 127    | 6     | 134      | 2,912   |
| NEW YORK             | 36069 | ONTARIO         | 0             | 0      | 0      | 0        | 2      | 111    | 0     | 113      | 0     | 3      | 0     | 3        | 116     |
| NEW YORK             | 36077 | OTSEGO          | 9,800         | 159    | 11     | 9,970    | 5,994  | 36,399 | 542   | 42,895   | 17    | 1,992  | 59    | 2,068    | 54,693  |
| NEW YORK             | 36095 | SCHOHARIE       | 0             | 0      | 0      | 0        | 7      | 970    | 41    | 1,018    | 0     | 40     | 3     | 43       | 1,060   |
| NEW YORK             | 36097 | SCHUYLER        | 0             | 0      | 0      | 0        | 34     | 3,802  | 121   | 3,957    | 0     | 124    | 44    | 168      | 4,125   |
| NEW YORK             | 36101 | STEBEN          | 29,196        | 480    | 0      | 29,676   | 10,422 | 42,623 | 2,023 | 55,068   | 0     | 2,370  | 349   | 2,719    | 87,463  |
| NEW YORK             | 36107 | TIOGA           | 14,698        | 1,724  | 58     | 16,480   | 2,603  | 30,809 | 720   | 34,232   | 2     | 1,204  | 56    | 1,262    | 51,974  |
| NEW YORK             | 36109 | TOMPKINS        | 0             | 0      | 0      | 0        | 442    | 4,658  | 90    | 5,391    | 1     | 156    | 8     | 164      | 5,555   |
| NEW YORK             | 36123 | YATES           | 0             | 0      | 0      | 0        | 4      | 223    | 10    | 237      | 0     | 19     | 2     | 20       | 257     |
| PENNSYLVANIA         | 42001 | ADAMS           | 11,203        | 48     | 0      | 11,251   | 22,325 | 37,495 | 1,376 | 61,196   | 16    | 2,581  | 68    | 2,785    | 75,212  |
| PENNSYLVANIA         | 42009 | BEDFORD         | 3,092         | 0      | 0      | 3,092    | 7,270  | 34,106 | 1,100 | 42,476   | 21    | 1,963  | 48    | 2,013    | 47,600  |
| PENNSYLVANIA         | 42011 | BERKS           | 137           | 2      | 0      | 139      | 1,228  | 9,983  | 155   | 11,345   | 4     | 855    | 34    | 893      | 12,377  |
| PENNSYLVANIA         | 42013 | BLAIR           | 76,534        | 5,610  | 182    | 82,327   | 14,016 | 29,215 | 861   | 44,091   | 0     | 1,141  | 74    | 1,215    | 127,634 |
| PENNSYLVANIA         | 42015 | BRADFORD        | 11,204        | 1,010  | 28     | 12,242   | 6,710  | 36,411 | 2,163 | 45,284   | 18    | 2,450  | 124   | 2,592    | 60,118  |

Table 9. All Housing Units, Population and Persons per Housing Unit Using Sewer, Septic and Other Means of Waste Disposal:

| STATE        | FIPS  | COUNTY         | B. POPULATION |        |       |          |        |         |       |          |       |        |       |          | TOTAL   |
|--------------|-------|----------------|---------------|--------|-------|----------|--------|---------|-------|----------|-------|--------|-------|----------|---------|
|              |       |                | Urban         |        |       |          | Rural  |         |       |          | Farm  |        |       |          |         |
|              |       |                | Sewer         | Septic | Other | Subtotal | Sewer  | Septic  | Other | Subtotal | Sewer | Septic | Other | Subtotal |         |
| PENNSYLVANIA | 42021 | CAMBRIA        | 2,508         | 0      | 0     | 2,508    | 13,947 | 14,082  | 1,186 | 29,195   | 25    | 369    | 16    | 428      | 32,132  |
| PENNSYLVANIA | 42023 | CAMERON        | 2,450         | 13     | 0     | 2,463    | 479    | 2,484   | 428   | 3,388    | 0     | 5      | 0     | 5        | 5,856   |
| PENNSYLVANIA | 42025 | CARBON         | 0             | 0      | 0     | 0        | 0      | 1       | 0     | 1        | 0     | 0      | 0     | 1        | 1       |
| PENNSYLVANIA | 42027 | CENTRE         | 57,146        | 1,098  | 0     | 58,244   | 14,591 | 32,905  | 984   | 48,480   | 74    | 1,878  | 107   | 2,059    | 108,783 |
| PENNSYLVANIA | 42029 | CHESTER        | 3,787         | 124    | 0     | 3,911    | 1,736  | 18,448  | 384   | 20,568   | 2     | 1,387  | 32    | 1,421    | 22,888  |
| PENNSYLVANIA | 42033 | CLEARFIELD     | 9,113         | 313    | 0     | 9,426    | 10,593 | 35,076  | 2,221 | 47,890   | 0     | 612    | 0     | 612      | 57,828  |
| PENNSYLVANIA | 42035 | CLINTON        | 7,178         | 18     | 0     | 7,196    | 14,280 | 11,580  | 1,314 | 27,174   | 29    | 637    | 71    | 737      | 35,107  |
| PENNSYLVANIA | 42037 | COLUMBIA       | 19,485        | 652    | 0     | 20,137   | 4,458  | 32,401  | 737   | 37,594   | 15    | 1,785  | 34    | 1,834    | 59,595  |
| PENNSYLVANIA | 42041 | CUMBERLAND     | 110,845       | 5,630  | 230   | 116,905  | 18,745 | 44,620  | 1,257 | 64,623   | 62    | 2,494  | 22    | 2,598    | 184,125 |
| PENNSYLVANIA | 42043 | DAUPHIN        | 166,274       | 7,851  | 603   | 174,929  | 14,778 | 40,534  | 1,279 | 56,589   | 135   | 1,702  | 0     | 1,837    | 233,354 |
| PENNSYLVANIA | 42047 | ELK            | 454           | 0      | 0     | 454      | 1,445  | 4,751   | 135   | 6,331    | 0     | 5      | 0     | 5        | 6,789   |
| PENNSYLVANIA | 42055 | FRANKLIN       | 33,427        | 630    | 0     | 34,056   | 36,402 | 42,068  | 1,671 | 80,161   | 48    | 4,023  | 152   | 4,224    | 118,441 |
| PENNSYLVANIA | 42057 | FULTON         | 0             | 0      | 0     | 0        | 2,318  | 10,340  | 336   | 12,994   | 4     | 744    | 19    | 767      | 13,781  |
| PENNSYLVANIA | 42061 | HUNTINGDON     | 8,606         | 0      | 0     | 8,606    | 5,138  | 23,938  | 1,085 | 30,159   | 6     | 1,179  | 39    | 1,224    | 39,989  |
| PENNSYLVANIA | 42063 | INDIANA        | 0             | 0      | 0     | 0        | 239    | 2,843   | 257   | 3,340    | 0     | 76     | 19    | 95       | 3,434   |
| PENNSYLVANIA | 42065 | JEFFERSON      | 0             | 0      | 0     | 0        | 0      | 3       | 0     | 3        | 0     | 0      | 0     | 3        | 3       |
| PENNSYLVANIA | 42067 | JUNIATA        | 0             | 0      | 0     | 0        | 4,403  | 14,049  | 627   | 19,079   | 13    | 1,050  | 128   | 1,192    | 20,271  |
| PENNSYLVANIA | 42069 | LACKAWANNA     | 172,415       | 2,899  | 314   | 175,627  | 7,908  | 22,293  | 721   | 30,920   | 0     | 435    | 0     | 435      | 206,982 |
| PENNSYLVANIA | 42071 | LANCASTER      | 223,277       | 8,674  | 1,311 | 233,261  | 38,224 | 118,857 | 3,276 | 158,357  | 843   | 15,322 | 1,165 | 17,029   | 409,547 |
| PENNSYLVANIA | 42075 | LEBANON        | 39,268        | 3,265  | 101   | 42,633   | 20,837 | 29,833  | 428   | 51,098   | 10    | 1,752  | 103   | 1,865    | 95,598  |
| PENNSYLVANIA | 42079 | LUZERNE        | 215,039       | 11,569 | 657   | 227,265  | 26,828 | 48,173  | 1,439 | 76,440   | 84    | 788    | 0     | 872      | 304,577 |
| PENNSYLVANIA | 42081 | LYCOMING       | 55,238        | 7,207  | 217   | 62,562   | 5,732  | 43,469  | 1,570 | 50,770   | 0     | 1,653  | 59    | 1,711    | 115,144 |
| PENNSYLVANIA | 42083 | MCKEAN         | 0             | 0      | 0     | 0        | 12     | 188     | 3     | 203      | 0     | 3      | 0     | 3        | 206     |
| PENNSYLVANIA | 42087 | MIFFLIN        | 9,211         | 78     | 0     | 9,289    | 14,949 | 18,506  | 1,194 | 34,649   | 117   | 1,274  | 373   | 1,764    | 45,702  |
| PENNSYLVANIA | 42093 | MONTOUR        | 6,989         | 112    | 7     | 7,088    | 969    | 7,688   | 205   | 8,763    | 7     | 639    | 16    | 662      | 16,513  |
| PENNSYLVANIA | 42097 | NORTHUMBERLAND | 48,359        | 311    | 73    | 48,743   | 18,730 | 27,318  | 796   | 46,842   | 33    | 1,457  | 35    | 1,624    | 95,210  |
| PENNSYLVANIA | 42099 | PERRY          | 2,320         | 105    | 0     | 2,425    | 8,528  | 26,788  | 1,405 | 36,721   | 16    | 1,616  | 50    | 1,682    | 40,828  |
| PENNSYLVANIA | 42105 | POTTER         | 0             | 0      | 0     | 0        | 1,682  | 3,191   | 405   | 5,278    | 15    | 250    | 0     | 265      | 5,543   |
| PENNSYLVANIA | 42107 | SCHUYLKILL     | 19,548        | 192    | 53    | 19,793   | 14,273 | 25,452  | 1,379 | 41,105   | 42    | 609    | 35    | 687      | 61,785  |
| PENNSYLVANIA | 42109 | SNYDER         | 3,937         | 61     | 0     | 3,998    | 10,338 | 16,799  | 1,282 | 28,417   | 50    | 1,603  | 486   | 2,121    | 34,636  |
| PENNSYLVANIA | 42111 | SOMERSET       | 0             | 0      | 0     | 0        | 24     | 2,229   | 122   | 2,375    | 0     | 276    | 11    | 287      | 2,662   |
| PENNSYLVANIA | 42113 | SULLIVAN       | 0             | 0      | 0     | 0        | 1,073  | 4,228   | 196   | 5,499    | 3     | 155    | 5     | 163      | 5,662   |
| PENNSYLVANIA | 42115 | SUSQUEHANNA    | 0             | 0      | 0     | 0        | 9,731  | 27,820  | 1,383 | 38,934   | 12    | 1,079  | 35    | 1,126    | 40,060  |
| PENNSYLVANIA | 42117 | TIOGA          | 5,082         | 239    | 7     | 5,329    | 5,966  | 24,373  | 1,238 | 31,577   | 15    | 2,158  | 66    | 2,239    | 39,145  |
| PENNSYLVANIA | 42119 | UNION          | 7,163         | 57     | 0     | 7,220    | 6,408  | 15,248  | 395   | 22,049   | 42    | 1,403  | 118   | 1,562    | 30,831  |
| PENNSYLVANIA | 42127 | WAYNE          | 0             | 0      | 0     | 0        | 288    | 911     | 51    | 1,249    | 0     | 53     | 3     | 66       | 1,315   |
| PENNSYLVANIA | 42131 | WYOMING        | 0             | 0      | 0     | 0        | 4,607  | 21,430  | 484   | 26,521   | 14    | 695    | 11    | 721      | 27,242  |
| PENNSYLVANIA | 42133 | YORK           | 162,050       | 16,775 | 225   | 179,050  | 34,522 | 112,602 | 3,623 | 180,747  | 83    | 4,942  | 61    | 4,766    | 334,583 |
| VIRGINIA     | 51001 | ACCOMACK       | 0             | 0      | 0     | 0        | 2,258  | 11,508  | 1,343 | 15,110   | 9     | 413    | 108   | 561      | 15,671  |
| VIRGINIA     | 51003 | ALBEMARLE      | 19,922        | 4,217  | 42    | 24,182   | 3,334  | 31,607  | 1,194 | 36,135   | 8     | 1,398  | 69    | 1,472    | 61,789  |
| VIRGINIA     | 51005 | ALLEGHANY      | 0             | 0      | 0     | 0        | 4,841  | 7,197   | 679   | 12,717   | 0     | 230    | 0     | 260      | 12,987  |
| VIRGINIA     | 51007 | AMELIA         | 0             | 0      | 0     | 0        | 641    | 6,743   | 657   | 8,042    | 8     | 611    | 63    | 721      | 8,763   |
| VIRGINIA     | 51009 | AMHERST        | 2,332         | 8,461  | 88    | 10,879   | 1,668  | 12,155  | 912   | 14,935   | 2     | 408    | 60    | 469      | 28,283  |
| VIRGINIA     | 51011 | APPOMATTOX     | 0             | 0      | 0     | 0        | 502    | 6,270   | 218   | 6,989    | 5     | 345    | 19    | 369      | 7,378   |
| VIRGINIA     | 51013 | ARLINGTON      | 165,325       | 950    | 431   | 166,738  | 0      | 0       | 0     | 0        | 0     | 0      | 0     | 166,708  | 166,708 |
| VIRGINIA     | 51015 | AUGUSTA        | 7,959         | 3,490  | 93    | 11,543   | 4,972  | 31,589  | 1,690 | 38,251   | 40    | 3,054  | 161   | 3,255    | 53,049  |
| VIRGINIA     | 51017 | BATH           | 0             | 0      | 0     | 0        | 1,598  | 2,412   | 539   | 4,550    | 2     | 152    | 40    | 193      | 4,743   |
| VIRGINIA     | 51019 | BEDFORD        | 1,109         | 3,298  | 47    | 4,454    | 252    | 3,921   | 259   | 4,431    | 1     | 165    | 11    | 177      | 8,999   |
| VIRGINIA     | 51023 | BOTETOURT      | 1             | 43     | 0     | 44       | 1,949  | 9,483   | 591   | 12,024   | 0     | 600    | 0     | 600      | 12,688  |
| VIRGINIA     | 51029 | BUCKINGHAM     | 0             | 0      | 0     | 0        | 814    | 9,363   | 1,088 | 11,285   | 6     | 424    | 48    | 478      | 11,743  |
| VIRGINIA     | 51031 | CAMPBELL       | 1,165         | 4,479  | 6     | 5,649    | 354    | 6,150   | 124   | 6,628    | 1     | 84     | 2     | 87       | 12,365  |
| VIRGINIA     | 51033 | CAROLINE       | 0             | 0      | 0     | 0        | 2,084  | 15,062  | 1,329 | 18,475   | 0     | 451    | 13    | 464      | 18,939  |
| VIRGINIA     | 51036 | CHARLES CITY   | 0             | 0      | 0     | 0        | 53     | 5,427   | 690   | 6,170    | 0     | 112    | 0     | 112      | 6,282   |

TABLE 8

Table 8. All Housing Units, Population and Persons per Housing Unit Using Sewer, Septic and Other Means of Waste Disposal:

| STATE    | FIPS  | COUNTY         | B. POPULATION |        |       |          |        |        |       |          |       |        |       |          | TOTAL |       |         |
|----------|-------|----------------|---------------|--------|-------|----------|--------|--------|-------|----------|-------|--------|-------|----------|-------|-------|---------|
|          |       |                | Urban         |        |       |          | Rural  |        |       |          | Farm  |        |       |          |       |       |         |
|          |       |                | Sewer         | Septic | Other | Subtotal | Sewer  | Septic | Other | Subtotal | Sewer | Septic | Other | Subtotal |       |       |         |
| VIRGINIA | 51037 | CHARLOTTE      | 0             | 0      | 0     | 0        | 0      | 1      | 0     | 0        | 0     | 0      | 0     | 0        | 0     | 0     | 1       |
| VIRGINIA | 51041 | CHESTERFIELD   | 148,485       | 23,625 | 309   | 172,619  | 7,908  | 25,607 | 142   | 33,757   | 0     | 0      | 0     | 0        | 0     | 0     | 1       |
| VIRGINIA | 51043 | CLARKE         | 2,890         | 314    | 0     | 2,974    | 580    | 7,043  | 417   | 8,040    | 5     | 446    | 0     | 446      | 0     | 446   | 206,821 |
| VIRGINIA | 51045 | CRAIG          | 0             | 0      | 0     | 0        | 695    | 2,624  | 224   | 3,543    | 0     | 136    | 0     | 136      | 0     | 136   | 11,743  |
| VIRGINIA | 51047 | CULPEPER       | 7,351         | 768    | 148   | 8,268    | 1,175  | 15,305 | 1,810 | 18,089   | 1     | 849    | 71    | 921      | 0     | 921   | 3,879   |
| VIRGINIA | 51049 | CUMBERLAND     | 290           | 35     | 21    | 347      | 112    | 5,848  | 881   | 6,839    | 2     | 516    | 75    | 603      | 0     | 603   | 27,278  |
| VIRGINIA | 51053 | DINWIDDIE      | 3,304         | 115    | 0     | 3,419    | 362    | 2,974  | 122   | 3,477    | 2     | 204    | 11    | 216      | 0     | 216   | 7,779   |
| VIRGINIA | 51057 | ESSEX          | 0             | 0      | 0     | 0        | 1,450  | 6,178  | 550   | 8,177    | 15    | 296    | 56    | 368      | 0     | 368   | 7,112   |
| VIRGINIA | 51059 | FAIRFAX        | 736,578       | 43,863 | 2,116 | 784,557  | 4,532  | 14,953 | 117   | 19,602   | 0     | 196    | 0     | 196      | 0     | 196   | 8,545   |
| VIRGINIA | 51061 | FAUCQUIER      | 4,272         | 405    | 5     | 4,682    | 7,483  | 32,107 | 1,174 | 40,765   | 13    | 2,178  | 61    | 2,252    | 0     | 2,252 | 804,355 |
| VIRGINIA | 51065 | FLUVANNA       | 0             | 0      | 0     | 0        | 2,638  | 4,671  | 710   | 11,919   | 9     | 391    | 22    | 423      | 0     | 423   | 47,999  |
| VIRGINIA | 51069 | FREDERICK      | 0             | 0      | 0     | 0        | 18,210 | 24,726 | 1,532 | 44,468   | 83    | 891    | 22    | 996      | 0     | 996   | 12,342  |
| VIRGINIA | 51071 | GILES          | 0             | 0      | 0     | 0        | 8      | 245    | 16    | 270      | 0     | 47     | 0     | 47       | 0     | 47    | 45,465  |
| VIRGINIA | 51073 | GLOUCESTER     | 1,121         | 7,660  | 119   | 8,899    | 1,318  | 14,072 | 1,124 | 20,514   | 5     | 350    | 43    | 399      | 0     | 399   | 317     |
| VIRGINIA | 51075 | GOOCHLAND      | 0             | 0      | 0     | 0        | 654    | 11,014 | 896   | 12,534   | 0     | 621    | 0     | 621      | 0     | 621   | 29,812  |
| VIRGINIA | 51079 | GREENE         | 0             | 0      | 0     | 0        | 1,257  | 4,156  | 513   | 9,828    | 5     | 346    | 21    | 371      | 0     | 371   | 13,155  |
| VIRGINIA | 51085 | HANOVER        | 17,297        | 10,584 | 122   | 27,973   | 4,513  | 26,440 | 1,778 | 32,731   | 0     | 1,147  | 0     | 1,147    | 0     | 1,147 | 10,297  |
| VIRGINIA | 51087 | HENRICO        | 190,196       | 8,224  | 256   | 198,636  | 1,252  | 14,861 | 395   | 16,178   | 17    | 291    | 0     | 308      | 0     | 308   | 61,851  |
| VIRGINIA | 51091 | HIGHLAND       | 0             | 0      | 0     | 0        | 326    | 1,672  | 301   | 2,199    | 4     | 355    | 77    | 436      | 0     | 436   | 215,122 |
| VIRGINIA | 51093 | ISLE OF WIGHT  | 4,050         | 550    | 4     | 4,604    | 1,022  | 10,832 | 340   | 12,193   | 0     | 368    | 21    | 387      | 0     | 387   | 2,634   |
| VIRGINIA | 51095 | JAMES CITY     | 14,480        | 1,076  | 34    | 15,589   | 8,647  | 9,116  | 251   | 18,013   | 59    | 102    | 4     | 165      | 0     | 165   | 17,84   |
| VIRGINIA | 51097 | KING AND QUEEN | 0             | 0      | 0     | 0        | 25     | 5,480  | 364   | 6,869    | 0     | 336    | 63    | 420      | 0     | 420   | 33,768  |
| VIRGINIA | 51099 | KING GEORGE    | 0             | 0      | 0     | 0        | 3,285  | 9,144  | 318   | 12,807   | 0     | 377    | 5     | 382      | 0     | 382   | 6,189   |
| VIRGINIA | 51101 | KING WILLIAM   | 2,604         | 255    | 0     | 2,859    | 130    | 7,000  | 502   | 7,633    | 0     | 277    | 62    | 339      | 0     | 339   | 13,189  |
| VIRGINIA | 51103 | LANCASTER      | 0             | 0      | 0     | 0        | 1,148  | 8,766  | 553   | 10,467   | 8     | 175    | 34    | 217      | 0     | 217   | 10,630  |
| VIRGINIA | 51107 | LOUDOUN        | 57,705        | 1,386  | 20    | 59,112   | 5,481  | 18,004 | 829   | 24,313   | 28    | 2,015  | 49    | 2,093    | 0     | 2,093 | 10,694  |
| VIRGINIA | 51109 | LOUISA         | 0             | 0      | 0     | 0        | 1,331  | 16,320 | 1,564 | 19,216   | 9     | 847    | 83    | 936      | 0     | 936   | 85,618  |
| VIRGINIA | 51111 | LUNENBERG      | 0             | 0      | 0     | 0        | 0      | 2      | 0     | 2        | 0     | 0      | 0     | 0        | 0     | 0     | 20,154  |
| VIRGINIA | 51113 | MADISON        | 0             | 0      | 0     | 0        | 391    | 9,425  | 1,050 | 10,866   | 0     | 785    | 71    | 856      | 0     | 856   | 2       |
| VIRGINIA | 51115 | MATHEWS        | 0             | 0      | 0     | 0        | 376    | 7,404  | 369   | 8,179    | 2     | 89     | 11    | 102      | 0     | 102   | 11,712  |
| VIRGINIA | 51119 | MIDDLESEX      | 0             | 0      | 0     | 0        | 726    | 7,126  | 319   | 8,169    | 1     | 260    | 24    | 285      | 0     | 285   | 8,231   |
| VIRGINIA | 51121 | MONTGOMERY     | 0             | 0      | 0     | 0        | 51     | 431    | 43    | 526      | 0     | 40     | 0     | 40       | 0     | 40    | 8,454   |
| VIRGINIA | 51125 | NELSON         | 0             | 0      | 0     | 0        | 1,023  | 9,193  | 1,980 | 12,096   | 1     | 469    | 71    | 641      | 0     | 641   | 699     |
| VIRGINIA | 51127 | NEW KENT       | 0             | 0      | 0     | 0        | 110    | 9,944  | 284   | 9,968    | 0     | 306    | 0     | 306      | 0     | 306   | 12,637  |
| VIRGINIA | 51131 | NORTHAMPTON    | 0             | 0      | 0     | 0        | 1,688  | 5,384  | 628   | 7,698    | 19    | 345    | 73    | 438      | 0     | 438   | 10,278  |
| VIRGINIA | 51133 | NORTHUMBERLAND | 0             | 0      | 0     | 0        | 609    | 8,781  | 618   | 10,006   | 7     | 414    | 81    | 501      | 0     | 501   | 8,135   |
| VIRGINIA | 51135 | NOTTOWAY       | 945           | 10     | 0     | 955      | 2,064  | 3,725  | 367   | 6,156    | 11    | 345    | 35    | 391      | 0     | 391   | 10,607  |
| VIRGINIA | 51137 | ORANGE         | 2,330         | 96     | 2     | 2,428    | 5,086  | 12,190 | 823   | 18,039   | 7     | 677    | 39    | 723      | 0     | 723   | 7,503   |
| VIRGINIA | 51139 | PAGE           | 4,018         | 427    | 3     | 4,448    | 3,998  | 11,615 | 712   | 16,325   | 23    | 679    | 12    | 714      | 0     | 714   | 21,190  |
| VIRGINIA | 51145 | POWHATAN       | 0             | 0      | 0     | 0        | 179    | 12,358 | 472   | 13,010   | 0     | 326    | 0     | 326      | 0     | 326   | 21,447  |
| VIRGINIA | 51147 | PRINCE EDWARD  | 3,219         | 332    | 4     | 3,555    | 332    | 8,799  | 695   | 9,786    | 2     | 485    | 31    | 619      | 0     | 619   | 13,306  |
| VIRGINIA | 51149 | PRINCE GEORGE  | 5,600         | 610    | 59    | 6,269    | 2,333  | 4,027  | 180   | 6,540    | 5     | 97     | 3     | 104      | 0     | 104   | 13,960  |
| VIRGINIA | 51153 | PRINCE WILLIAM | 168,121       | 3,528  | 199   | 171,848  | 7,127  | 31,507 | 748   | 39,381   | 13    | 621    | 10    | 644      | 0     | 644   | 12,914  |
| VIRGINIA | 51157 | RAPPAHANNOCK   | 0             | 0      | 0     | 0        | 395    | 5,229  | 554   | 6,180    | 0     | 387    | 38    | 429      | 0     | 429   | 211,673 |
| VIRGINIA | 51159 | RICHMOND       | 0             | 0      | 0     | 0        | 754    | 5,121  | 539   | 6,415    | 22    | 378    | 107   | 506      | 0     | 506   | 6,808   |
| VIRGINIA | 51161 | ROANOKE        | 0             | 0      | 0     | 0        | 11     | 998    | 7     | 987      | 0     | 56     | 0     | 56       | 0     | 56    | 6,921   |
| VIRGINIA | 51163 | ROCKBRIDGE     | 0             | 0      | 0     | 0        | 2,925  | 13,035 | 1,290 | 17,220   | 9     | 833    | 87    | 929      | 0     | 929   | 1,012   |
| VIRGINIA | 51165 | ROCKINGHAM     | 2,931         | 202    | 0     | 3,133    | 11,081 | 35,684 | 2,156 | 48,800   | 79    | 3,719  | 200   | 3,998    | 0     | 3,998 | 18,148  |
| VIRGINIA | 51171 | SHEPANDOAH     | 6,094         | 691    | 24    | 6,808    | 5,937  | 15,483 | 1,644 | 23,044   | 27    | 1,163  | 55    | 1,285    | 0     | 1,285 | 85,931  |
| VIRGINIA | 51177 | SPOTSYLVANIA   | 25,010        | 1,728  | 12    | 26,749   | 5,957  | 22,424 | 1,091 | 29,471   | 0     | 830    | 9     | 839      | 0     | 839   | 31,118  |
| VIRGINIA | 51179 | STAFFORD       | 17,154        | 2,138  | 41    | 19,333   | 18,069 | 22,752 | 806   | 39,626   | 0     | 249    | 3     | 251      | 0     | 251   | 57,059  |
| VIRGINIA | 51181 | SURRY          | 0             | 0      | 0     | 0        | 436    | 2,241  | 202   | 2,879    | 4     | 202    | 12    | 217      | 0     | 217   | 59,211  |
| VIRGINIA | 51187 | WARREN         | 10,757        | 885    | 2     | 11,645   | 374    | 12,898 | 574   | 13,844   | 0     | 232    | 6     | 231      | 0     | 231   | 3,096   |
|          |       |                |               |        |       |          |        |        |       |          |       |        |       |          |       |       | 25,727  |

Table 8. All Housing Units, Population and Persons per Housing Unit Using Sewer, Septic and Other Means of Waste Disposal:

| STATE         | FIPS  | COUNTY              | B. POPULATION |         |        |           |         |           |         |           |       |         |       |          | TOTAL  |     |  |  |  |  |  |  |  |  |  |
|---------------|-------|---------------------|---------------|---------|--------|-----------|---------|-----------|---------|-----------|-------|---------|-------|----------|--------|-----|--|--|--|--|--|--|--|--|--|
|               |       |                     | Urban         |         |        |           | Rural   |           |         |           | Farm  |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
|               |       |                     | Sewer         | Septic  | Other  | Subtotal  | Sewer   | Septic    | Other   | Subtotal  | Sewer | Septic  | Other | Subtotal |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51193 | WESTMORELAND        | 2,787         | 254     | 5      | 3,445     |         |           |         |           |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51199 | YORK                | 22,438        | 8,295   | 60     | 30,792    | 458     | 10,482    | 930     | 11,870    |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51510 | ALEXANDRIA          | 108,570       | 65      | 236    | 108,871   | 3,443   | 7,631     | 68      | 11,060    |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51540 | BUENA VISTA         | 4,943         | 179     | 57     | 5,178     | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51540 | CHARLOTTESVILLE     | 36,318        | 600     | 173    | 37,091    | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51550 | CHESAPEAKE CITY     | 117,252       | 9,305   | 321    | 126,878   | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51580 | CLIFTON FORGE       | 3,627         | 10      | 0      | 3,637     | 1       | 73        | 1       | 74        |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51570 | COLONIAL HEIGHTS    | 15,817        | 45      | 0      | 15,862    | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51580 | COVINGTON           | 5,876         | 27      | 0      | 5,903     | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51800 | FAIRFAX             | 17,660        | 248     | 13     | 18,120    | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51610 | FALLS CHURCH        | 9,455         | 18      | 67     | 9,539     | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51630 | FREDERICKSBURG      | 16,484        | 169     | 12     | 16,665    | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51650 | HAMPTON CITY        | 125,432       | 2,357   | 395    | 128,184   | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51660 | HARRISONBURG        | 22,592        | 1,093   | 39     | 23,725    | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51670 | HOPEWELL            | 22,293        | 300     | 241    | 22,794    | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51678 | LEXINGTON           | 3,672         | 22      | 0      | 3,694     | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51680 | LYNCHBURG           | 49,128        | 10,891  | 102    | 60,121    | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51683 | MANASSAS CITY       | 26,282        | 391     | 27     | 26,700    | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51685 | MANASSAS PARK CITY  | 6,734         | 0       | 0      | 6,734     | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51700 | NEWPORT NEWS CITY   | 160,662       | 4,343   | 373    | 165,369   | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51710 | NORFOLK CITY        | 225,181       | 2,106   | 776    | 228,064   | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51730 | PETERSBURG          | 30,666        | 231     | 81     | 30,977    | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51735 | POQUOSON            | 7,924         | 2,981   | 11     | 10,915    | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51740 | PORTSMOUTH CITY     | 100,121       | 794     | 502    | 101,417   | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51760 | RICHMOND CITY       | 187,180       | 4,049   | 722    | 191,951   | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51790 | STAUNTON            | 20,098        | 663     | 91     | 20,852    | 10      | 42        | 0       | 52        |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51800 | SUFFOLK CITY        | 20,779        | 13,421  | 1,036  | 36,237    | 198     | 3,804     | 177     | 4,160     |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51810 | VIRGINIA BEACH CITY | 240,502       | 11,584  | 366    | 252,451   | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51820 | WAYNESBORO          | 15,532        | 1,052   | 99     | 16,683    | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51830 | WILLIAMSBURG        | 6,833         | 271     | 10     | 7,213     | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| VIRGINIA      | 51840 | WINCHESTER          | 19,111        | 765     | 0      | 19,876    | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| WEST VIRGINIA | 54003 | BERKELEY            | 13,910        | 753     | 62     | 14,725    | 0       | 0         | 0       | 0         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| WEST VIRGINIA | 54023 | GRANT               | 0             | 0       | 0      | 0         | 10,215  | 30,601    | 1,731   | 42,547    |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| WEST VIRGINIA | 54025 | GREENBRIAR          | 0             | 0       | 0      | 0         | 2,954   | 6,265     | 562     | 9,801     |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| WEST VIRGINIA | 54027 | HAMPSHIRE           | 1             | 0       | 0      | 2         | 1       | 2         | 0       | 2         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| WEST VIRGINIA | 54031 | HARDY               | 0             | 0       | 0      | 0         | 2,367   | 11,510    | 1,499   | 15,377    |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| WEST VIRGINIA | 54037 | JEFFERSON           | 0             | 0       | 0      | 0         | 2,873   | 6,248     | 1,090   | 10,211    |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| WEST VIRGINIA | 54057 | MINERAL             | 5,615         | 198     | 0      | 5,813     | 7,359   | 20,055    | 455     | 27,869    |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| WEST VIRGINIA | 54063 | MONROE              | 6,958         | 1,654   | 57     | 8,669     | 5,937   | 10,697    | 334     | 17,169    |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| WEST VIRGINIA | 54065 | MORGAN              | 0             | 0       | 0      | 0         | 43      | 580       | 101     | 723       |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| WEST VIRGINIA | 54071 | PENDLETON           | 0             | 0       | 0      | 0         | 2,736   | 8,632     | 387     | 11,755    |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| WEST VIRGINIA | 54075 | POCAHONTAS          | 0             | 0       | 0      | 0         | 1,055   | 4,819     | 1,145   | 7,018     |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| WEST VIRGINIA | 54077 | PRESTON             | 0             | 0       | 0      | 0         | 0       | 2         | 0       | 3         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| WEST VIRGINIA | 54083 | RANDOLPH            | 0             | 0       | 0      | 0         | 1       | 43        | 3       | 47        |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| WEST VIRGINIA | 54093 | TUCKER              | 0             | 0       | 0      | 0         | 0       | 1         | 0       | 2         |       |         |       |          |        |     |  |  |  |  |  |  |  |  |  |
| Grand Total   |       |                     | 9,165,018     | 551,783 | 37,125 | 9,773,926 | 825,592 | 2,899,693 | 124,247 | 3,849,133 | 3,160 | 151,259 | 9,182 | 163,661  | 13,787 | 250 |  |  |  |  |  |  |  |  |  |

Table 8. All Housing Units, Population and Persons per Housing Unit Using Sewer, Septic and Other Means of Waste Disposal:

| C. AVERAGE NUMBER OF PERSONS PER HOUSEHOLD |       |                |       |        |       |         |       |        |       |         |       |        |       |         | Average<br>Persons Per<br>Household<br>(all) |
|--|-------|----------------|-------|--------|-------|---------|-------|--------|-------|---------|-------|--------|-------|---------|--|
| STATE                                      | FIPS  | COUNTY         | Urban |        |       |         | Rural |        |       |         | Farm  |        |       |         |  |
|  |       |                | Sewer | Septic | Other | Average | Sewer | Septic | Other | Average | Sewer | Septic | Other | Average |  |
| DELAWARE                                   | 10001 | KENT           | 1.3   | 1.6    | 2.4   | 1.8     | 2.6   | 3.0    | 3.7   | 3.1     | 1.8   | 2.9    | 3.5   | 2.7     | 2.5  |
| DELAWARE                                   | 10003 | NEW CASTLE     | 2.4   | 3.7    | 4.9   | 3.6     | 3.4   | 2.9    | 2.1   | 2.8     | 2.4   | 3.1    | 3.3   | 2.9     | 3.1  |
| DELAWARE                                   | 10005 | SUSSEX         | 2.5   | 2.7    | 3.7   | 3.0     | 2.4   | 2.8    | 2.8   | 2.7     | 1.4   | 2.7    | 3.4   | 2.5     | 2.7  |
| DISTRICT OF COLUMBIA                       | 11001 | WASHINGTON     | 2.3   | 2.8    | 3.4   | 2.6     |       |        |       |         |       |        |       |         | 2.9  |
| MARYLAND                                   | 24001 | ALLEGANY       | 2.3   | 2.5    | 1.7   | 2.2     | 2.5   | 2.7    | 2.2   | 2.5     | 2.4   | 4.8    | 2.3   | 1.1     | 2.6  |
| MARYLAND                                   | 24003 | ANNE ARUNDEL   | 2.8   | 2.9    | 2.7   | 2.8     | 2.6   | 3.0    | 2.3   | 2.6     | 2.2   | 2.8    | 2.7   | 1.6     | 2.7  |
| MARYLAND                                   | 24005 | BALTIMORE      | 2.5   | 2.7    | 2.8   | 2.7     | 2.2   | 1.9    | 3.1   | 2.7     |       | 2.7    |       | 1.7     | 2.7  |
| MARYLAND                                   | 24009 | CALVERT        | 2.6   | 2.8    | 2.6   | 2.7     | 2.6   | 3.2    | 2.8   | 2.8     | 3.2   | 2.6    | 4.3   | 1.4     | 3.0  |
| MARYLAND                                   | 24011 | CAROLINE       | 2.4   | 3.5    | 2.2   | 2.7     | 2.5   | 2.8    | 2.6   | 2.6     | 4.5   | 2.9    | 1.8   | 1.1     | 2.8  |
| MARYLAND                                   | 24013 | CARROLL        | 2.5   | 3.1    | 3.5   | 3.1     | 2.5   | 3.6    | 2.6   | 2.9     | 1.3   | 3.3    |       | 2.3     | 2.7  |
| MARYLAND                                   | 24015 | CECIL          | 2.6   | 2.9    | 2.5   | 2.7     | 2.7   | 3.0    | 2.7   | 2.8     | 3.0   | 2.6    | 1.7   | 2.4     | 2.6  |
| MARYLAND                                   | 24017 | CHARLES        | 3.0   | 3.1    | 3.4   | 3.2     | 3.8   | 3.1    | 3.2   | 3.4     | 1.0   | 3.4    | 1.4   | 1.9     | 2.6  |
| MARYLAND                                   | 24019 | DORCHESTER     | 2.3   | 2.4    | 2.3   | 2.3     | 2.5   | 2.6    | 3.0   | 2.7     | 2.9   | 2.4    | 2.6   | 2.6     | 2.6  |
| MARYLAND                                   | 24021 | FREDERICK      | 2.6   | 3.1    | 2.6   | 2.8     | 2.6   | 3.3    | 3.1   | 3.0     |       | 3.0    |       | 3.0     | 2.9  |
| MARYLAND                                   | 24023 | GARRETT        |       |        |       |         | 2.5   | 2.9    | 2.4   | 2.6     | 1.9   | 3.5    | 1.9   | 2.4     | 2.5  |
| MARYLAND                                   | 24025 | HARFORD        | 2.8   | 3.5    | 1.8   | 2.6     | 2.3   | 3.0    | 3.4   | 2.9     |       | 2.7    |       | 2.7     | 2.7  |
| MARYLAND                                   | 24027 | HOWARD         | 2.6   | 2.9    | 3.2   | 2.9     | 2.6   | 4.0    | 2.7   | 3.1     | 1.9   | 3.2    |       | 2.6     | 2.9  |
| MARYLAND                                   | 24029 | KENT           | 2.2   | 3.0    | 2.5   | 2.5     | 2.4   | 2.8    | 2.4   | 2.5     | 3.6   | 2.7    | 1.7   | 2.7     | 2.6  |
| MARYLAND                                   | 24031 | MONTGOMERY     | 2.6   | 2.9    | 3.4   | 3.0     | 2.9   | 3.2    | 3.7   | 3.3     | 1.9   | 2.8    |       | 2.4     | 2.9  |
| MARYLAND                                   | 24033 | PRINCE GEORGES | 2.8   | 2.9    | 3.2   | 2.9     | 3.3   | 2.9    | 2.5   | 2.9     |       | 3.2    |       | 3.2     | 3.0  |
| MARYLAND                                   | 24035 | QUEEN ANNE'S   |       |        |       |         | 2.5   | 2.8    | 2.6   | 2.6     | 3.2   | 2.6    | 1.6   | 2.5     | 2.6  |
| MARYLAND                                   | 24037 | SAINT MARY'S   | 2.9   | 2.9    | 2.2   | 2.7     | 2.5   | 2.9    | 2.5   | 2.6     | 4.7   | 3.7    | 5.8   | 4.7     | 3.4  |
| MARYLAND                                   | 24039 | SOMERSET       | 2.4   | 3.3    | 1.1   | 2.3     | 2.3   | 2.6    | 2.2   | 2.3     | 3.5   | 2.8    | 2.7   | 3.0     | 2.5  |
| MARYLAND                                   | 24041 | TALBOT         | 2.2   | 2.9    | 2.6   | 2.6     | 2.2   | 2.8    | 2.3   | 2.4     | 2.3   | 2.4    | 1.7   | 2.1     | 2.3  |
| MARYLAND                                   | 24043 | WASHINGTON     | 2.3   | 2.7    | 2.6   | 2.5     | 2.6   | 2.9    | 2.6   | 2.7     | 3.4   | 2.7    | 2.7   | 2.9     | 2.7  |
| MARYLAND                                   | 24045 | WICOMICO       | 2.4   | 3.5    | 4.7   | 3.5     | 2.5   | 2.7    | 2.2   | 2.5     | 3.1   | 2.6    | 2.8   | 2.9     | 3.0  |
| MARYLAND                                   | 24047 | WORCESTER      | 2.4   | 6.1    | 3.0   | 3.8     | 2.5   | 2.8    | 2.3   | 2.5     | 3.0   | 2.5    | 2.5   | 2.7     | 3.0  |
| MARYLAND                                   | 24510 | BALTIMORE CITY | 2.6   | 4.3    | 3.8   | 3.6     |       |        |       |         |       |        |       |         |  |
| NEW YORK                                   | 36003 | ALLEGANY       | 2.2   | 27.9   |       | 15.1    | 2.0   | 2.3    | 2.5   | 2.3     |       | 2.7    | 4.2   | 3.5     | 3.6  |
| NEW YORK                                   | 36007 | BROOME         | 2.4   | 2.7    | 2.6   | 2.6     | 2.4   | 2.9    | 1.8   | 2.4     |       | 3.6    | 2.7   | 3.2     | 6.9  |
| NEW YORK                                   | 36011 | CAYUGA         |       |        |       |         | 2.7   | 3.3    | 2.0   | 2.7     | 2.0   | 2.9    |       | 2.5     | 2.7  |
| NEW YORK                                   | 36015 | CHEMUNG        | 2.4   | 2.6    | 5.2   | 3.4     | 2.4   | 2.9    | 2.6   | 2.6     |       | 2.5    | 2.4   | 2.4     | 2.6  |
| NEW YORK                                   | 36017 | CHENANGO       | 2.3   | 2.6    | 2.0   | 2.3     | 2.4   | 2.3    | 2.7   | 2.6     | 2.3   | 2.8    | 1.7   | 2.3     | 2.4  |
| NEW YORK                                   | 36023 | CORTLAND       | 2.4   | 2.5    | 3.5   | 2.8     | 2.4   | 2.9    | 2.8   | 2.7     | 3.9   | 3.3    | 1.6   | 3.0     | 2.8  |
| NEW YORK                                   | 36025 | DELAWARE       | 2.5   | 2.2    |       | 2.3     | 2.5   | 2.7    | 2.4   | 2.5     | 2.9   | 2.3    | 2.6   | 2.5     | 2.5  |
| NEW YORK                                   | 36043 | HERKIMER       |       |        |       |         | 2.4   | 2.3    | 2.8   | 2.6     | 2.1   | 3.3    | 1.9   | 2.1     | 2.6  |
| NEW YORK                                   | 36051 | LIVINGSTON     |       |        |       |         |       | 2.3    | 2.2   | 2.5     |       | 2.7    | 1.3   | 2.0     | 2.3  |
| NEW YORK                                   | 36053 | MADISON        | 2.5   | 6.2    | 4.4   | 4.3     | 2.0   | 2.4    | 2.4   | 2.3     | 2.0   | 3.7    | 1.7   | 2.4     | 3.0  |
| NEW YORK                                   | 36065 | ONEIDA EAST    | 2.8   | 2.7    | 2.6   | 2.7     | 2.5   | 3.0    | 2.9   | 2.8     | 2.8   | 2.8    | 1.5   | 2.4     | 2.6  |
| NEW YORK                                   | 36067 | ONONDAGA       |       |        |       |         | 2.6   | 2.9    | 2.8   | 2.8     | 3.1   | 3.8    | 2.0   | 3.0     | 2.9  |
| NEW YORK                                   | 36069 | ONTARIO        |       |        |       |         | 2.5   | 2.4    |       | 2.6     | 1.0   | 1.8    |       | 1.4     | 2.0  |
| NEW YORK                                   | 36077 | OTSEGO         | 2.3   | 2.3    | 3.7   | 2.8     | 2.3   | 2.7    | 2.5   | 2.5     | 2.6   | 3.1    | 1.6   | 2.5     | 2.6  |
| NEW YORK                                   | 36095 | SCHOHARIE      |       |        |       |         | 2.4   | 2.4    | 2.5   | 2.5     | 3.4   | 3.5    | 1.6   | 2.1     | 2.7  |
| NEW YORK                                   | 36097 | SCHUYLER       |       |        |       |         | 2.3   | 2.9    | 2.6   | 2.6     |       | 2.7    | 2.5   | 2.6     | 2.6  |
| NEW YORK                                   | 36101 | STUYVEN        | 2.4   | 2.4    |       | 2.4     | 2.4   | 2.4    | 2.6   | 2.7     |       | 3.8    | 4.7   | 4.3     | 3.1  |
| NEW YORK                                   | 36107 | TIOGA          | 2.6   | 3.8    | 4.8   | 3.7     | 2.4   | 2.8    | 2.7   | 2.6     | 2.9   | 3.4    | 2.2   | 2.6     | 3.1  |
| NEW YORK                                   | 36109 | TOMPKINS       |       |        |       |         | 2.2   | 2.7    | 2.5   | 2.4     | 4.3   | 3.2    | 1.6   | 3.0     | 2.7  |
| NEW YORK                                   | 36123 | YATES          |       |        |       |         | 2.5   | 2.7    | 2.6   | 2.6     |       | 3.6    | 5.9   | 4.6     | 3.7  |
| PENNSYLVANIA                               | 42001 | ADAMS          | 2.3   | 2.5    |       | 2.4     | 2.7   | 2.8    | 2.4   | 2.6     | 2.0   | 3.1    | 2.3   | 2.6     | 2.6  |
| PENNSYLVANIA                               | 42009 | BEDFORD        | 2.1   |        |       | 2.1     | 2.3   | 2.6    | 2.3   | 2.5     | 2.9   | 3.4    | 2.5   | 2.9     | 2.5  |
| PENNSYLVANIA                               | 42011 | BERKS          | 3.2   | 4.3    | 5.0   | 4.2     | 2.5   | 2.6    | 2.4   | 2.6     | 3.5   | 4.0    | 3.5   | 3.7     | 3.5  |
| PENNSYLVANIA                               | 42013 | BLAIR          | 2.5   | 2.8    | 2.0   | 2.3     | 2.5   | 2.8    | 2.4   | 2.6     |       | 3.1    | 5.3   | 4.2     | 3.0  |
| PENNSYLVANIA                               | 42015 | BRADFORD       | 2.4   | 2.4    | 1.5   | 2.1     | 2.4   | 2.6    | 2.9   | 2.7     | 3.2   | 2.9    | 2.6   | 3.0     | 2.6  |

Table 8. All Housing Units, Population and Persons per Housing Unit Using Sewer, Septic and Other Means of Waste Disposal:

C. AVERAGE NUMBER OF PERSONS PER HOUSEHOLD

| STATE        | FIPS  | COUNTY         | Urban |        |       |         | Rural |        |       |         | Farm  |        |       |         | Average Persons Per Household (all) |
|--------------|-------|----------------|-------|--------|-------|---------|-------|--------|-------|---------|-------|--------|-------|---------|-------------------------------------|
|              |       |                | Sewer | Septic | Other | Average | Sewer | Septic | Other | Average | Sewer | Septic | Other | Average |                                     |
| PENNSYLVANIA | 42021 | CAMBRIA        | 2.5   |        |       | 2.5     | 2.5   | 3.1    | 2.5   | 2.7     | 1.9   | 3.0    | 2.8   | 2.8     | 2.6                                 |
| PENNSYLVANIA | 42023 | CAMERON        | 2.2   | 2.4    |       | 2.3     | 2.6   | 2.7    | 2.8   | 2.7     | 2.0   | 1.6    | 1.8   | 1.8     | 2.3                                 |
| PENNSYLVANIA | 42025 | CARBON         |       |        |       |         | 2.5   | 2.7    | 2.8   | 2.6     |       |        | 4.2   | 4.2     | 3.4                                 |
| PENNSYLVANIA | 42027 | CENTRE         | 2.4   | 3.8    |       | 3.1     | 2.5   | 2.8    | 2.3   | 2.5     | 3.9   | 2.6    | 5.2   | 3.9     | 3.2                                 |
| PENNSYLVANIA | 42029 | CHESTER        | 2.4   | 3.7    |       | 3.0     | 2.6   | 3.7    | 2.9   | 3.1     | 1.6   | 3.8    | 4.7   | 3.4     | 3.2                                 |
| PENNSYLVANIA | 42033 | CLEARFIELD     | 2.2   | 3.4    |       | 2.8     | 2.5   | 2.7    | 2.7   | 2.7     |       | 2.8    |       | 2.8     | 2.8                                 |
| PENNSYLVANIA | 42035 | CLINTON        | 2.3   | 2.9    |       | 2.6     | 2.4   | 2.8    | 2.7   | 2.7     | 2.0   | 3.6    | 4.8   | 3.4     | 2.9                                 |
| PENNSYLVANIA | 42037 | COLUMBIA       | 2.4   | 2.3    |       | 2.3     | 2.4   | 2.7    | 2.2   | 2.4     | 2.7   | 2.9    | 3.0   | 2.9     | 2.5                                 |
| PENNSYLVANIA | 42041 | CUMBERLAND     | 2.4   | 2.9    | 3.8   | 3.0     | 2.5   | 2.9    | 2.2   | 2.6     | 2.6   | 2.9    | 4.6   | 3.4     | 3.0                                 |
| PENNSYLVANIA | 42043 | DAUPHIN        | 2.3   | 3.0    | 3.2   | 2.9     | 2.5   | 2.8    | 2.7   | 2.7     | 3.8   | 3.3    |       | 3.6     | 3.0                                 |
| PENNSYLVANIA | 42047 | ELK            | 2.5   |        |       | 2.5     | 2.9   | 2.9    | 2.9   | 2.9     | 4.3   | 2.2    |       | 3.2     | 2.9                                 |
| PENNSYLVANIA | 42055 | FRANKLIN       | 2.3   | 2.5    |       | 2.4     | 2.8   | 2.9    | 2.4   | 2.8     | 1.9   | 3.5    | 2.8   | 2.7     | 2.6                                 |
| PENNSYLVANIA | 42057 | FULTON         |       |        |       |         | 2.3   | 2.8    | 2.3   | 2.5     | 2.1   | 2.8    | 2.2   | 2.4     | 2.4                                 |
| PENNSYLVANIA | 42061 | HUNTINGDON     | 2.2   |        |       | 2.2     | 2.4   | 2.7    | 2.3   | 2.5     | 2.4   | 3.2    | 2.3   | 2.6     | 2.6                                 |
| PENNSYLVANIA | 42063 | INDIANA        |       |        |       |         | 2.7   | 2.9    | 2.9   | 2.8     | 1.7   | 2.8    | 6.5   | 3.7     | 3.3                                 |
| PENNSYLVANIA | 42065 | JEFFERSON      |       |        |       |         | 2.8   | 2.9    | 3.5   | 3.1     |       | 3.7    |       | 3.7     | 3.4                                 |
| PENNSYLVANIA | 42067 | JUNIATA        |       |        |       |         | 2.3   | 2.8    | 3.3   | 2.8     | 1.8   | 2.8    | 3.8   | 2.8     | 2.8                                 |
| PENNSYLVANIA | 42069 | LACKAWANNA     | 2.4   | 3.0    | 3.4   | 2.9     | 2.7   | 2.8    | 3.2   | 2.9     |       | 2.7    |       | 2.7     | 2.8                                 |
| PENNSYLVANIA | 42071 | LANCASTER      | 2.5   | 3.6    | 4.9   | 3.7     | 2.8   | 3.4    | 2.7   | 2.9     | 3.4   | 4.6    | 4.6   | 4.2     | 3.6                                 |
| PENNSYLVANIA | 42075 | LEBANON        | 2.4   | 2.8    | 1.7   | 2.3     | 2.5   | 2.9    | 2.2   | 2.6     | 2.0   | 3.2    | 6.4   | 3.8     | 2.9                                 |
| PENNSYLVANIA | 42079 | LUZERNE        | 2.4   | 2.8    | 2.5   | 2.6     | 2.5   | 2.8    | 2.5   | 2.6     | 2.2   | 3.1    |       | 2.7     | 2.6                                 |
| PENNSYLVANIA | 42081 | LYCOMING       | 2.4   | 2.4    | 4.3   | 3.0     | 2.3   | 2.8    | 2.9   | 2.7     | 2.7   | 2.7    | 3.3   | 3.0     | 2.9                                 |
| PENNSYLVANIA | 42083 | MCKEAN         |       |        |       |         | 2.5   | 2.8    | 2.7   | 2.8     | 5.0   | 4.6    |       | 4.8     | 3.7                                 |
| PENNSYLVANIA | 42087 | MIFFLIN        | 2.2   | 2.6    |       | 2.4     | 2.5   | 2.8    | 3.1   | 2.8     | 2.4   | 3.6    | 5.0   | 3.7     | 3.0                                 |
| PENNSYLVANIA | 42093 | MONTOUR        | 2.2   | 1.6    | 2.1   | 2.0     | 3.1   | 2.9    | 2.3   | 2.8     | 4.4   | 3.1    | 3.6   | 3.8     | 2.8                                 |
| PENNSYLVANIA | 42097 | NORTHUMBERLAND | 2.4   | 2.5    | 2.2   | 2.4     | 2.4   | 2.8    | 2.3   | 2.5     | 2.8   | 3.1    | 3.5   | 3.1     | 2.7                                 |
| PENNSYLVANIA | 42099 | PERRY          | 2.4   | 2.4    |       | 2.4     | 2.4   | 2.9    | 2.4   | 2.8     | 2.8   | 2.9    | 4.6   | 3.4     | 2.8                                 |
| PENNSYLVANIA | 42105 | POTTER         |       |        |       |         | 2.5   | 2.7    | 2.9   | 2.7     | 7.1   | 3.5    |       | 5.3     | 4.0                                 |
| PENNSYLVANIA | 42107 | SCHUYLKILL     | 2.2   | 2.8    | 5.4   | 3.5     | 2.4   | 2.7    | 2.5   | 2.5     | 2.2   | 2.7    | 3.8   | 2.9     | 3.0                                 |
| PENNSYLVANIA | 42109 | SNYDER         | 2.3   | 2.5    |       | 2.4     | 2.5   | 2.9    | 3.4   | 2.9     | 2.1   | 3.7    | 5.7   | 3.9     | 3.0                                 |
| PENNSYLVANIA | 42111 | SOMERSET       |       |        |       |         | 2.6   | 2.9    | 2.4   | 2.6     | 2.9   | 3.4    | 2.5   | 2.9     | 2.8                                 |
| PENNSYLVANIA | 42113 | SULLIVAN       |       |        |       |         | 2.1   | 2.6    | 2.5   | 2.4     | 1.4   | 3.3    | 2.5   | 2.4     | 2.4                                 |
| PENNSYLVANIA | 42115 | SUSQUEHANNA    |       |        |       |         | 2.5   | 2.8    | 2.8   | 1.7     | 3.4   | 3.2    | 2.6   | 3.0     | 2.9                                 |
| PENNSYLVANIA | 42117 | TIOGA          | 2.3   | 2.3    | 1.5   | 2.0     | 2.4   | 2.7    | 2.7   | 2.6     | 3.7   | 3.2    | 2.5   | 3.1     | 2.6                                 |
| PENNSYLVANIA | 42119 | UNION          | 2.3   | 2.6    |       | 2.4     | 2.5   | 2.9    | 3.4   | 1.9     | 2.4   | 3.9    | 5.5   | 3.9     | 3.1                                 |
| PENNSYLVANIA | 42127 | WAYNE          |       |        |       |         | 2.6   | 2.8    | 3.4   | 1.9     |       | 2.6    | 2.9   | 2.8     | 2.8                                 |
| PENNSYLVANIA | 42131 | WYOMING        |       |        |       |         | 2.4   | 2.8    | 2.7   | 1.6     | 3.5   | 3.9    | 2.5   | 3.3     | 2.9                                 |
| PENNSYLVANIA | 42133 | YORK           | 2.4   | 2.8    | 2.9   | 2.7     | 2.6   | 2.8    | 2.8   | 1.7     | 1.8   | 3.0    | 1.3   | 2.0     | 2.5                                 |
| VIRGINIA     | 51001 | ACCOMACK       |       |        |       |         | 2.4   | 2.5    | 2.6   | 1.5     | 2.2   | 2.8    | 3.0   | 2.6     | 2.6                                 |
| VIRGINIA     | 51003 | ALBEMARLE      | 2.2   | 2.8    | 4.5   | 3.1     | 2.5   | 2.8    | 2.7   | 1.7     | 1.0   | 2.6    | 1.8   | 1.8     | 2.5                                 |
| VIRGINIA     | 51005 | ALLEGHANY      |       |        |       |         | 2.6   | 2.7    | 2.3   | 1.5     |       | 3.2    |       | 3.2     | 2.9                                 |
| VIRGINIA     | 51007 | AMELIA         |       |        |       |         | 2.3   | 2.8    | 3.2   | 1.6     | 3.5   | 3.0    | 2.9   | 3.1     | 3.0                                 |
| VIRGINIA     | 51009 | AMHERST        | 2.2   | 2.7    | 3.5   | 2.8     | 2.6   | 2.9    | 2.4   | 1.6     | 0.6   | 2.2    | 3.5   | 2.2     | 2.5                                 |
| VIRGINIA     | 51011 | APPOMATTOX     |       |        |       |         | 2.4   | 2.7    | 2.4   | 1.5     | 3.5   | 3.1    | 4.7   | 3.8     | 3.2                                 |
| VIRGINIA     | 51013 | ARLINGTON      | 2.1   | 4.0    | 4.2   | 3.4     |       |        |       |         |       |        |       |         |                                     |
| VIRGINIA     | 51015 | AUGUSTA        | 2.6   | 2.8    | 3.2   | 2.9     | 2.3   | 2.7    | 2.4   | 1.5     | 3.0   | 3.7    | 2.8   | 3.1     | 1.4                                 |
| VIRGINIA     | 51017 | BATH           |       |        |       |         | 2.4   | 2.6    | 2.3   | 1.4     | 0.9   | 2.5    | 2.0   | 1.8     | 1.1                                 |
| VIRGINIA     | 51019 | BEDFORD        | 2.3   | 2.7    | 2.9   | 2.6     | 2.6   | 2.7    | 2.4   | 1.6     | 2.5   | 2.2    | 3.2   | 2.6     | 2.6                                 |
| VIRGINIA     | 51023 | BOTETOURT      | 2.8   | 3.0    |       | 2.9     | 2.4   | 2.7    | 2.3   | 1.5     |       | 2.5    |       | 2.5     | 2.6                                 |
| VIRGINIA     | 51029 | BUCKINGHAM     |       |        |       |         | 2.5   | 2.7    | 3.6   | 2.9     | 2.5   | 2.5    |       | 2.6     | 1.7                                 |
| VIRGINIA     | 51031 | CAMPBELL       | 2.3   | 2.8    | 2.7   | 2.6     | 2.5   | 2.6    | 2.4   | 2.5     | 2.9   | 3.2    | 4.5   | 3.5     | 2.9                                 |
| VIRGINIA     | 51033 | CAROLINE       |       |        |       |         | 2.7   | 2.9    | 2.7   | 2.8     |       | 2.3    | 1.0   | 1.6     | 2.2                                 |
| VIRGINIA     | 51036 | CHARLES CITY   |       |        |       |         | 3.7   | 2.9    | 3.3   | 3.3     |       | 2.5    |       | 2.5     | 2.9                                 |

Table 8. All Housing Units, Population and Persons per Housing Unit Using Sewer, Septic and Other Means of Waste Disposal:

|          |       | C. AVERAGE NUMBER OF PERSONS PER HOUSEHOLD |       |        |       |         |       |        |       |         |       |        |       | Average Persons Per Household (all) |         |  |  |     |
|----------|-------|--|-------|--------|-------|---------|-------|--------|-------|---------|-------|--------|-------|-------------------------------------|---------|--|--|-----|
| STATE    | FIPS  | COUNTY                                     | Urban |        |       |         | Rural |        |       |         | Farm  |        |       |                                     |         |  |  |     |
|          |       |  | Sewer | Septic | Other | Average | Sewer | Septic | Other | Average | Sewer | Septic | Other |                                     | Average |  |  |     |
| VIRGINIA | 51037 | CHARLOTTE                                  |       |        |       |         | 2.5   | 2.7    | 2.8   | 2.7     |       |        |       |                                     |         |  |  | 3.0 |
| VIRGINIA | 51041 | CHESTERFIELD                               |       |        |       |         | 2.7   | 1.3    | 2.0   | 2.7     |       |        |       |                                     |         |  |  | 3.0 |
| VIRGINIA | 51043 | CLARKE                                     |       | 2.8    | 2.7   | 2.0     | 2.5   | 2.7    | 2.7   | 2.7     |       |        |       |                                     |         |  |  | 2.8 |
| VIRGINIA | 51045 | CRAIG                                      |       | 2.7    | 3.4   | 1.0     | 2.4   | 2.8    | 2.8   | 2.6     | 2.7   |        |       |                                     |         |  |  | 2.8 |
| VIRGINIA | 51047 | CULPEPER                                   |       |        |       |         | 2.5   | 2.7    | 2.3   | 2.5     |       |        |       |                                     |         |  |  | 2.3 |
| VIRGINIA | 51049 | CUMBERLAND                                 |       | 2.4    | 2.8   | 4.9     | 3.3   | 2.8    | 3.0   | 3.5     | 3.1   |        |       |                                     |         |  |  | 2.8 |
| VIRGINIA | 51053 | DINWIDDIE                                  |       | 2.1    | 1.0   | 2.2     | 1.8   | 2.9    | 2.8   | 3.3     | 3.0   |        |       |                                     |         |  |  | 2.8 |
| VIRGINIA | 51057 | ESSEX                                      |       | 2.6    | 2.8   |         | 2.7   | 2.5    | 2.8   | 3.2     | 2.8   |        |       |                                     |         |  |  | 2.5 |
| VIRGINIA | 51059 | FAIRFAX                                    |       |        |       |         | 2.2   | 2.8    | 2.8   | 2.6     | 2.6   |        |       |                                     |         |  |  | 2.9 |
| VIRGINIA | 51061 | FAUQUIER                                   |       | 2.7    | 3.2   | 3.9     | 3.3   | 3.3    | 3.8   | 1.8     | 2.9   |        |       |                                     |         |  |  | 2.6 |
| VIRGINIA | 51065 | FLUVANNA                                   |       | 2.4    | 2.5   | 2.9     | 2.6   | 2.9    | 3.0   | 3.4     | 3.1   |        |       |                                     |         |  |  | 3.9 |
| VIRGINIA | 51069 | FREDERICK                                  |       |        |       |         | 2.8   | 2.9    | 3.9   | 3.1     | 1.4   |        |       |                                     |         |  |  | 2.6 |
| VIRGINIA | 51071 | GILES                                      |       |        |       |         | 2.7   | 2.9    | 2.8   | 2.7     | 2.8   |        |       |                                     |         |  |  | 2.4 |
| VIRGINIA | 51073 | GLOUCESTER                                 |       |        |       |         | 2.7   | 2.3    | 2.4   | 2.8     | 2.8   |        |       |                                     |         |  |  | 2.5 |
| VIRGINIA | 51075 | GOOCHLAND                                  |       | 2.8    | 2.6   | 2.2     | 2.5   | 2.3    | 2.9   | 2.7     | 2.8   |        |       |                                     |         |  |  | 2.7 |
| VIRGINIA | 51079 | GREENE                                     |       |        |       |         | 2.8   | 2.7    | 2.8   | 2.8     | 2.8   |        |       |                                     |         |  |  | 2.5 |
| VIRGINIA | 51085 | HANOVER                                    |       |        |       |         | 2.5   | 2.9    | 3.0   | 2.8     | 2.8   |        |       |                                     |         |  |  | 2.7 |
| VIRGINIA | 51087 | HENRICO                                    |       | 2.8    | 2.9   | 2.0     | 2.5   | 3.0    | 2.8   | 3.1     | 3.0   |        |       |                                     |         |  |  | 2.3 |
| VIRGINIA | 51091 | HIGHLAND                                   |       | 2.4    | 2.4   | 2.3     | 2.4   | 3.6    | 2.8   | 2.8     | 3.1   |        |       |                                     |         |  |  | 2.8 |
| VIRGINIA | 51093 | ISLE OF WIGHT                              |       |        |       |         | 2.2   | 2.4    | 2.2   | 2.2     | 2.3   |        |       |                                     |         |  |  | 2.8 |
| VIRGINIA | 51095 | JAMES CITY                                 |       | 2.7    | 2.4   | 2.8     | 2.7   | 2.9    | 2.7   | 2.8     | 2.8   |        |       |                                     |         |  |  | 2.3 |
| VIRGINIA | 51097 | KING AND QUEEN                             |       | 2.8    | 2.9   | 1.9     | 2.4   | 2.6    | 2.8   | 3.1     | 2.8   |        |       |                                     |         |  |  | 2.6 |
| VIRGINIA | 51099 | KING GEORGE                                |       |        |       |         | 2.2   | 2.7    | 2.7   | 2.8     | 2.8   |        |       |                                     |         |  |  | 2.5 |
| VIRGINIA | 51101 | KING WILLIAM                               |       |        |       |         | 2.7   | 2.6    | 2.6   | 2.7     | 2.6   |        |       |                                     |         |  |  | 2.8 |
| VIRGINIA | 51103 | LANCASTER                                  |       | 2.6    | 3.1   |         | 2.8   | 2.2    | 3.0   | 3.0     | 2.7   |        |       |                                     |         |  |  | 2.8 |
| VIRGINIA | 51107 | LOUDOUN                                    |       |        |       |         | 2.5   | 2.4    | 2.2   | 2.4     | 2.4   |        |       |                                     |         |  |  | 2.7 |
| VIRGINIA | 51109 | LOUISA                                     |       | 2.6    | 2.5   | 1.4     | 2.3   | 2.8    | 2.9   | 3.0     | 2.8   |        |       |                                     |         |  |  | 2.3 |
| VIRGINIA | 51111 | LUNENBERG                                  |       |        |       |         | 2.4   | 2.7    | 2.8   | 2.6     | 2.6   |        |       |                                     |         |  |  | 2.6 |
| VIRGINIA | 51113 | MADISON                                    |       |        |       |         | 2.5   | 2.7    | 3.3   | 2.9     | 2.9   |        |       |                                     |         |  |  | 2.6 |
| VIRGINIA | 51115 | MATHEWS                                    |       |        |       |         | 2.6   | 2.8    | 3.2   | 2.9     | 2.9   |        |       |                                     |         |  |  | 2.3 |
| VIRGINIA | 51119 | MIDDLESEX                                  |       |        |       |         | 2.0   | 2.4    | 2.1   | 2.2     | 1.6   |        |       |                                     |         |  |  | 2.8 |
| VIRGINIA | 51121 | MONTGOMERY                                 |       |        |       |         | 2.8   | 2.4    | 2.3   | 2.4     | 2.3   |        |       |                                     |         |  |  | 2.1 |
| VIRGINIA | 51125 | NELSON                                     |       |        |       |         | 2.7   | 2.7    | 2.3   | 2.6     | 2.6   |        |       |                                     |         |  |  | 2.7 |
| VIRGINIA | 51127 | NEW KENT                                   |       |        |       |         | 2.5   | 2.6    | 2.8   | 2.6     | 2.6   |        |       |                                     |         |  |  | 2.7 |
| VIRGINIA | 51131 | NORTHAMPTON                                |       |        |       |         | 3.0   | 2.7    | 3.1   | 3.0     | 3.0   |        |       |                                     |         |  |  | 2.1 |
| VIRGINIA | 51133 | NORTHUMBERLAND                             |       |        |       |         | 2.3   | 2.4    | 2.7   | 2.5     | 2.5   |        |       |                                     |         |  |  | 3.1 |
| VIRGINIA | 51135 | NOTTOWAY                                   |       |        |       |         | 2.0   | 2.4    | 2.2   | 2.2     | 2.2   |        |       |                                     |         |  |  | 2.8 |
| VIRGINIA | 51137 | ORANGE                                     |       | 2.6    | 3.8   |         | 3.2   | 2.4    | 2.7   | 3.0     | 2.7   |        |       |                                     |         |  |  | 2.4 |
| VIRGINIA | 51139 | PAGE                                       |       | 2.4    | 2.9   | 6.4     | 3.9   | 2.5    | 2.8   | 3.1     | 2.8   |        |       |                                     |         |  |  | 2.9 |
| VIRGINIA | 51145 | POWHATAN                                   |       | 2.3    | 3.3   | 1.3     | 2.3   | 2.7    | 2.8   | 2.6     | 2.7   |        |       |                                     |         |  |  | 2.9 |
| VIRGINIA | 51147 | PRINCE EDWARD                              |       |        |       |         | 2.9   | 2.9    | 2.9   | 3.2     | 3.0   |        |       |                                     |         |  |  | 2.3 |
| VIRGINIA | 51149 | PRINCE GEORGE                              |       | 2.4    | 3.2   | 8.0     | 4.8   | 1.8    | 2.7   | 3.9     | 2.8   |        |       |                                     |         |  |  | 2.6 |
| VIRGINIA | 51153 | PRINCE WILLIAM                             |       | 3.3    | 2.7   | 3.2     | 3.1   | 2.9    | 2.9   | 3.0     | 2.9   |        |       |                                     |         |  |  | 3.3 |
| VIRGINIA | 51157 | RAPPAHANNOCK                               |       | 3.4    | 3.1   | 2.7     | 3.1   | 2.6    | 3.2   | 3.3     | 3.0   |        |       |                                     |         |  |  | 2.8 |
| VIRGINIA | 51159 | RICHMOND                                   |       |        |       |         | 2.7   | 2.8    | 2.8   | 2.7     | 2.7   |        |       |                                     |         |  |  | 3.1 |
| VIRGINIA | 51161 | ROANOKE                                    |       |        |       |         | 2.1   | 2.7    | 2.5   | 2.5     | 2.0   |        |       |                                     |         |  |  | 2.3 |
| VIRGINIA | 51163 | ROCKBRIDGE                                 |       |        |       |         | 2.6   | 2.7    | 2.2   | 2.5     | 2.5   |        |       |                                     |         |  |  | 2.5 |
| VIRGINIA | 51165 | ROCKINGHAM                                 |       |        |       |         | 2.4   | 2.8    | 2.2   | 2.4     | 2.4   |        |       |                                     |         |  |  | 2.4 |
| VIRGINIA | 51171 | SHENANDOAH                                 |       | 2.5    | 2.9   |         | 2.7   | 2.4    | 2.8   | 2.5     | 2.6   |        |       |                                     |         |  |  | 2.8 |
| VIRGINIA | 51177 | SPOTSYLVANIA                               |       | 2.3    | 3.3   | 1.5     | 2.4   | 2.4    | 2.6   | 2.5     | 2.6   |        |       |                                     |         |  |  | 2.7 |
| VIRGINIA | 51179 | STAFFORD                                   |       | 2.9    | 2.9   | 2.0     | 2.6   | 3.8    | 3.8   | 2.9     | 3.5   |        |       |                                     |         |  |  | 2.2 |
| VIRGINIA | 51181 | SURRY                                      |       | 3.2    | 2.8   | 2.4     | 2.8   | 3.2    | 3.2   | 2.8     | 3.0   |        |       |                                     |         |  |  | 3.0 |
| VIRGINIA | 51187 | WARREN                                     |       | 2.5    | 3.5   | 1.2     | 2.4   | 2.5    | 2.6   | 3.0     | 2.7   |        |       |                                     |         |  |  | 2.7 |
|          |       |  |       |        |       |         |       | 2.4    | 2.7   | 2.5     | 2.5   |        |       |                                     |         |  |  | 2.8 |
|          |       |  |       |        |       |         |       |        |       |         |       |        |       |                                     |         |  |  | 2.3 |

Table 8. All Housing Units, Population and Persons per Housing Unit Using Sewer, Septic and Other Means of Waste Disposal:

| STATE         | FIPS  | COUNTY              | C. AVERAGE NUMBER OF PERSONS PER HOUSEHOLD |        |       |         |       |        |       |         |       |        |       |         | Average Persons Per Household (all) |
|---------------|-------|---------------------|--|--------|-------|---------|-------|--------|-------|---------|-------|--------|-------|---------|-------------------------------------|
|               |       |                     | Urban                                      |        |       |         | Rural |        |       |         | Farm  |        |       |         |                                     |
|               |       |                     | Sewer                                      | Septic | Other | Average | Sewer | Septic | Other | Average | Sewer | Septic | Other | Average |                                     |
| VIRGINIA      | 51193 | WESTMORELAND        | 2.3  | 2.8    | 1.4   | 2.1     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51199 | YORK                | 3.0  | 2.7    | 1.8   | 3.1     | 3.4   | 2.7    | 3.8   | 3.3     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51510 | ALEXANDRIA          | 2.4  | 1.0    | 2.9   | 2.1     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51530 | BUENA VISTA         | 2.5  | 2.4    | 2.4   | 2.5     | 2.3   | 2.7    | 3.8   | 3.3     | 3.9   | 2.4    | 4.8   | 3.7     | 3.4                                 |
| VIRGINIA      | 51540 | CHARLOTTESVILLE     | 2.4  | 2.8    | 6.2   | 3.6     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51550 | CHESAPEAKE CITY     | 2.8  | 3.4    | 2.9   | 3.0     | 4.7   | 3.2    | 2.1   | 3.3     | 3.9   | 2.4    | 4.8   | 3.7     | 3.4                                 |
| VIRGINIA      | 51560 | CLIFTON FORGE       | 2.3  | 2.8    | 2.5   | 2.5     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51570 | COLONIAL HEIGHTS    | 2.5  | 2.2    | 2.3   | 2.3     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51580 | COVINGTON           | 2.3  | 2.6    | 2.4   | 2.4     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51600 | FAIRFAX             | 2.7  | 2.9    | 2.7   | 2.8     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51610 | FALLS CHURCH        | 2.3  | 2.3    | 2.6   | 2.4     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51630 | FREDERICKSBURG      | 2.2  | 2.2    | 1.4   | 2.0     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51650 | HAMPTON CITY        | 2.6  | 2.3    | 4.4   | 3.1     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51660 | HARRISONBURG        | 2.4  | 2.4    | 2.4   | 2.4     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51670 | HOPEWELL            | 2.5  | 2.4    | 2.6   | 2.5     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51678 | LEXINGTON           | 2.2  | 2.3    | 2.3   | 2.3     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51680 | LYNCHBURG           | 2.3  | 2.7    | 2.9   | 2.6     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51683 | MANASSAS CITY       | 2.9  | 3.2    | 3.4   | 3.1     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51685 | MANASSAS PARK CITY  | 3.9  | 3.9    | 3.9   | 3.9     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51700 | NEWPORT NEWS CITY   | 2.6  | 2.6    | 2.6   | 2.6     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51710 | NORFOLK CITY        | 2.5  | 3.0    | 3.9   | 3.1     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51730 | PETERSBURG          | 2.5  | 2.2    | 2.9   | 2.5     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51735 | POQUOSON            | 2.9  | 2.8    | 2.3   | 2.7     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51740 | PORTSMOUTH CITY     | 2.6  | 2.3    | 4.2   | 3.0     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51760 | RICHMOND CITY       | 2.2  | 2.5    | 3.4   | 2.7     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51790 | STAUNTON            | 2.3  | 2.3    | 2.4   | 2.3     | 2.3   | 2.6    | 2.6   | 2.5     | 1.4   | 2.1    | 4.2   | 2.6     | 2.4                                 |
| VIRGINIA      | 51800 | SUFFOLK CITY        | 2.7  | 2.8    | 3.2   | 2.9     | 2.6   | 1.8    | 2.9   | 2.2     | 1.9   | 6.2    | 2.2   | 4.1     | 2.7                                 |
| VIRGINIA      | 51810 | VIRGINIA BEACH CITY | 2.7  | 2.6    | 3.4   | 2.9     | 2.9   | 3.0    | 2.9   | 2.9     | 1.9   | 6.2    | 2.2   | 4.1     | 2.7                                 |
| VIRGINIA      | 51820 | WAYNEBORO           | 2.4  | 2.3    | 2.7   | 2.5     | 2.9   | 2.9    | 2.9   | 2.9     | 1.9   | 6.2    | 2.2   | 4.1     | 2.7                                 |
| VIRGINIA      | 51830 | WILLIAMSBURG        | 2.8  | 2.1    | 1.5   | 2.1     | 2.9   | 2.9    | 2.9   | 2.9     | 1.9   | 6.2    | 2.2   | 4.1     | 2.7                                 |
| VIRGINIA      | 51840 | WINCHESTER          | 2.3  | 2.8    | 2.6   | 2.6     | 2.9   | 2.9    | 2.9   | 2.9     | 1.9   | 6.2    | 2.2   | 4.1     | 2.7                                 |
| WEST VIRGINIA | 54003 | BERKELEY            | 2.3  | 2.8    | 2.6   | 2.6     | 2.9   | 2.9    | 2.9   | 2.9     | 1.9   | 6.2    | 2.2   | 4.1     | 2.7                                 |
| WEST VIRGINIA | 54023 | GRANT               | 2.9  | 2.8    | 2.2   | 2.4     | 2.4   | 2.8    | 2.6   | 2.6     | 1.7   | 3.0    | 2.1   | 2.3     | 2.4                                 |
| WEST VIRGINIA | 54025 | GREENBRIAR          | 2.5  | 6.0    | 4.3   | 4.3     | 2.4   | 2.8    | 2.6   | 2.6     | 1.7   | 3.0    | 2.1   | 2.3     | 2.4                                 |
| WEST VIRGINIA | 54027 | HAMPSHIRE           | 2.5  | 6.0    | 4.3   | 4.3     | 2.4   | 2.8    | 2.6   | 2.6     | 1.7   | 3.0    | 2.1   | 2.3     | 2.4                                 |
| WEST VIRGINIA | 54031 | HARDY               | 2.5  | 6.0    | 4.3   | 4.3     | 2.4   | 2.8    | 2.6   | 2.6     | 1.7   | 3.0    | 2.1   | 2.3     | 2.4                                 |
| WEST VIRGINIA | 54037 | JEFFERSON           | 2.4  | 3.0    | 2.7   | 2.7     | 2.2   | 2.8    | 2.5   | 2.5     | 2.8   | 2.9    | 1.8   | 2.5     | 2.5                                 |
| WEST VIRGINIA | 54057 | MINERAL             | 2.4  | 3.0    | 2.7   | 2.7     | 2.3   | 2.7    | 2.5   | 2.5     | 2.8   | 2.9    | 1.8   | 2.5     | 2.5                                 |
| WEST VIRGINIA | 54063 | MONROE              | 2.4  | 2.6    | 1.7   | 2.3     | 2.4   | 2.9    | 2.8   | 2.7     | 1.8   | 2.5    | 1.8   | 2.0     | 2.3                                 |
| WEST VIRGINIA | 54065 | MORGAN              | 2.5  | 2.9    | 2.8   | 2.8     | 2.4   | 2.9    | 2.8   | 2.7     | 1.8   | 2.5    | 1.8   | 2.0     | 2.3                                 |
| WEST VIRGINIA | 54071 | PENDLETON           | 2.5  | 2.7    | 2.8   | 2.8     | 2.5   | 2.7    | 2.8   | 2.8     | 2.8   | 2.7    | 1.5   | 2.2     | 2.4                                 |
| WEST VIRGINIA | 54075 | POCAHONTAS          | 2.2  | 2.6    | 2.4   | 2.4     | 2.5   | 2.7    | 2.8   | 2.8     | 2.8   | 2.7    | 1.5   | 2.2     | 2.4                                 |
| WEST VIRGINIA | 54077 | PRESTON             | 2.2  | 2.6    | 2.4   | 2.4     | 2.2   | 2.6    | 2.4   | 2.4     | 1.5   | 2.5    | 2.5   | 2.3     | 2.5                                 |
| WEST VIRGINIA | 54083 | RANDOLPH            | 2.2  | 2.6    | 2.4   | 2.4     | 2.2   | 2.7    | 2.5   | 2.5     | 2.9   | 3.3    | 1.9   | 2.7     | 2.6                                 |
| WEST VIRGINIA | 54093 | TUCKER              | 2.2  | 2.5    | 2.4   | 2.4     | 2.5   | 2.9    | 2.7   | 2.7     | 1.0   | 2.6    | 1.9   | 1.8     | 2.2                                 |
| Grand Total   |       |                     | 2.5  | 2.8    | 3.3   | 2.9     | 2.4   | 2.8    | 2.6   | 2.6     | 2.7   | 3.3    | 1.9   | 3.3     | 2.9                                 |
|               |       |                     |  |        |       |         | 2.5   | 2.8    | 2.7   | 2.7     | 2.7   | 3.2    | 2.0   | 3.0     | 2.8                                 |

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES

Average Number of Households and Number of People per Household  
Using Septic and Other non-sewered Treatment

NCRI-CHESAPEAKE, Inc.

| STATE                | FIPS  | COUNTY          | a. HOUSING UNITS |         |          |          |       |          |        |       |          | TOTAL<br>(septic/other) |
|----------------------|-------|-----------------|------------------|---------|----------|----------|-------|----------|--------|-------|----------|-------------------------|
|                      |       |                 | Urban            |         |          | Rural    |       |          | Farm   |       |          |                         |
|                      |       |                 | Septic           | Other   | Subtotal | Septic   | Other | Subtotal | Septic | Other | Subtotal |                         |
| DELAWARE             | 10001 | KENT            | 3.9              | 0.2     | 4.1      | 4,646.9  | 17.6  | 4734.5   | 307.4  | 10.6  | 318.1    | 5,056.7                 |
| DELAWARE             | 10003 | NEW CASTLE      | 134.9            | 0.1     | 135.0    | 1,095.4  | 10.2  | 1,105.6  | 47.8   | 1.2   | 49.1     | 1,289.7                 |
| DELAWARE             | 10005 | SUSSEX          | 415.7            | 27.3    | 443.0    | 10,705.1 | 368.4 | 11,073.5 | 608.7  | 49.2  | 658.0    | 12,174.3                |
| DISTRICT OF COLUMBIA | 11001 | WASHINGTON      | 503.1            | 1,198.4 | 1,701.5  | -        | -     | -        | -      | -     | -        | 1,701.5                 |
| MARYLAND             | 24001 | ALLEGANY        | 847.0            | 56.2    | 903.2    | 3,639.5  | 211.9 | 3,851.4  | 49.0   | 11.0  | 60.1     | 4,814.7                 |
| MARYLAND             | 24003 | ANNE ARUNDEL    | 24,152.8         | 596.6   | 24,749.4 | 11,936.4 | 210.1 | 12,176.4 | 448.5  | 15.3  | 463.7    | 37,389.6                |
| MARYLAND             | 24005 | BALTIMORE       | 11,302.6         | 457.7   | 11,760.2 | 18,299.0 | 313.9 | 18,612.8 | 628.0  | -     | 628.0    | 31,001.1                |
| MARYLAND             | 24009 | CALVERT         | 1,925.1          | 17.7    | 1,942.8  | 12,016.3 | 415.3 | 12,461.6 | 361.6  | 44.2  | 405.8    | 14,810.2                |
| MARYLAND             | 24011 | CAROLINE        | 84.9             | 1.6     | 86.6     | 5,605.7  | 260.5 | 5,866.2  | 677.6  | 12.0  | 689.5    | 6,642.3                 |
| MARYLAND             | 24013 | CARROLL         | 1,623.6          | 19.0    | 1,642.6  | 22,755.0 | 563.4 | 23,318.4 | 965.8  | -     | 965.8    | 25,926.7                |
| MARYLAND             | 24015 | CECIL           | 359.0            | 39.0    | 398.0    | 13,014.4 | 410.0 | 13,424.4 | 541.9  | 4.6   | 546.4    | 14,368.9                |
| MARYLAND             | 24017 | CHARLES         | 2,144.1          | 55.5    | 2,199.6  | 10,113.7 | 833.6 | 10,947.3 | 359.3  | 84.6  | 443.9    | 13,590.8                |
| MARYLAND             | 24019 | DORCHESTER      | 25.0             | 6.8     | 31.8     | 4,830.4  | 459.2 | 5,269.6  | 312.9  | 27.9  | 340.8    | 5,642.2                 |
| MARYLAND             | 24021 | FREDERICK       | 5,974.0          | 151.8   | 6,125.8  | 15,692.1 | 559.9 | 16,251.9 | 985.0  | -     | 985.0    | 23,362.8                |
| MARYLAND             | 24023 | GARRETT         | -                | -       | -        | 1,307.4  | 72.0  | 1,379.4  | 80.5   | 14.6  | 95.2     | 1,474.6                 |
| MARYLAND             | 24025 | HARFORD         | 6,939.4          | 80.1    | 7,019.6  | 16,441.6 | 439.2 | 16,880.8 | 415.0  | -     | 415.0    | 24,315.4                |
| MARYLAND             | 24027 | HOWARD          | 2,448.6          | 47.6    | 2,496.2  | 8,540.4  | 171.5 | 8,712.0  | 269.3  | -     | 269.3    | 11,477.4                |
| MARYLAND             | 24029 | KENT            | 113.1            | 6.0     | 119.1    | 2,801.1  | 229.9 | 3,037.9  | 391.1  | 10.7  | 401.8    | 3,558.9                 |
| MARYLAND             | 24031 | MONTGOMERY      | 7,023.4          | 380.5   | 7,403.9  | 8,900.5  | 124.2 | 9,024.7  | 376.5  | -     | 376.5    | 16,805.2                |
| MARYLAND             | 24033 | PRINCE GEORGE'S | 5,425.9          | 729.3   | 6,155.2  | 3,415.5  | 141.2 | 3,558.7  | 188.0  | -     | 188.0    | 9,901.9                 |
| MARYLAND             | 24035 | QUEEN ANNE'S    | -                | -       | -        | 8,044.6  | 271.0 | 8,322.6  | 424.8  | 5.0   | 429.8    | 8,752.4                 |
| MARYLAND             | 24037 | SAINT MARYS     | 2,618.2          | 36.3    | 2,654.5  | 13,734.1 | 561.3 | 14,298.4 | 493.1  | 92.9  | 586.0    | 17,538.9                |
| MARYLAND             | 24039 | SOMERSET        | 16.4             | 0.3     | 16.8     | 4,233.3  | 187.8 | 4,421.1  | 286.6  | 14.6  | 301.2    | 4,739.0                 |
| MARYLAND             | 24041 | TALBOT          | 187.9            | 14.8    | 202.7    | 5,656.1  | 131.1 | 5,787.2  | 481.1  | 3.4   | 484.6    | 6,474.4                 |
| MARYLAND             | 24043 | WASHINGTON      | 3,602.2          | 31.4    | 3,633.6  | 12,566.7 | 516.9 | 13,083.7 | 518.3  | 56.8  | 575.0    | 17,292.2                |
| MARYLAND             | 24045 | WICOMICO        | 163.6            | 16.5    | 180.1    | 13,374.0 | 295.2 | 13,669.2 | 590.0  | 22.6  | 612.6    | 14,461.9                |
| MARYLAND             | 24047 | WORCESTER       | 22.3             | 2.2     | 24.5     | 2,379.8  | 91.8  | 2,471.6  | 213.6  | 10.1  | 223.7    | 2,719.8                 |
| MARYLAND             | 24310 | BALTIMORE CITY  | 1,334.4          | 2,814.5 | 4,148.9  | -        | -     | -        | -      | -     | -        | 4,148.9                 |
| NEW YORK             | 36003 | ALLEGANY        | 11.4             | -       | 11.4     | 913.3    | 14.0  | 927.3    | 30.4   | 0.8   | 31.3     | 970.0                   |
| NEW YORK             | 36007 | BROOME          | 4,893.2          | 33.0    | 4,926.2  | 17,269.3 | 221.8 | 17,493.1 | 233.1  | 49.9  | 283.1    | 22,702.4                |
| NEW YORK             | 36011 | CAYUGA          | -                | -       | -        | 14.0     | 6.0   | 14.0     | 1.3    | -     | 1.3      | 15.3                    |
| NEW YORK             | 36015 | CHENUNGO        | 4,564.5          | 28.2    | 4,592.7  | 7,051.0  | 85.8  | 7,140.8  | 140.4  | 27.5  | 167.9    | 11,901.3                |
| NEW YORK             | 36017 | CHENANGO        | 38.6             | 2.8     | 41.4     | 12,133.0 | 382.9 | 12,515.9 | 608.6  | 19.5  | 628.0    | 13,185.3                |
| NEW YORK             | 36023 | CORTLAND        | 417.8            | 6.9     | 424.7    | 5,928.4  | 167.2 | 6,095.6  | 320.5  | 31.9  | 352.4    | 6,872.7                 |
| NEW YORK             | 36025 | DELAWARE        | 29.5             | -       | 29.5     | 3,142.6  | 74.0  | 3,216.6  | 191.6  | 11.1  | 202.7    | 3,448.8                 |

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
 URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
 OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
 COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
 COUNTY SUMMARIES

NCM-CHESAPEAKE, Inc.

| STATE    | FIPS  | COUNTY           | b. POPULATION |       |          |          |         |          |         |       |          | TOTAL<br>(septic/other) | c. POPULATION<br>PER<br>HOUSEHOLD<br>(septic/other) |
|----------|-------|------------------|---------------|-------|----------|----------|---------|----------|---------|-------|----------|-------------------------|---|
|          |       |                  | Urban         |       |          | Rural    |         |          | Farm    |       |          |                         |   |
|          |       |                  | Septic        | Other | Subtotal | Septic   | Other   | Subtotal | Septic  | Other | Subtotal |                         |   |
| VIRGINIA | 51101 | KING WILLIAM     | 254.9         | -     | 254.9    | 7,003.4  | 302.5   | 7,305.9  | 276.9   | 61.9  | 338.8    | 8,096.6                 | 2.9   |
| VIRGINIA | 51103 | LANCASTER        | -             | -     | -        | 8,766.2  | 552.6   | 9,318.8  | 174.7   | 34.2  | 208.9    | 9,527.7                 | 2.4   |
| VIRGINIA | 51107 | LOUDOUN          | 1,386.3       | 20.5  | 1,406.7  | 18,001.7 | 828.7   | 18,830.4 | 2,015.5 | 49.2  | 2,064.7  | 22,303.8                | 2.8   |
| VIRGINIA | 51109 | LOUISA           | -             | -     | -        | 16,328.0 | 1,564.1 | 17,892.1 | 847.1   | 82.8  | 929.9    | 18,822.0                | 2.7   |
| VIRGINIA | 51111 | LUNENBERG        | -             | -     | -        | 2.2      | 0.1     | 2.3      | 0.1     | 0.0   | 0.1      | 2.4                     | 2.7   |
| VIRGINIA | 51113 | MADISON          | -             | -     | -        | 9,424.7  | 1,050.1 | 10,474.8 | 785.1   | 70.9  | 856.0    | 11,330.8                | 2.8   |
| VIRGINIA | 51115 | MATHEWS          | -             | -     | -        | 7,404.1  | 398.1   | 7,802.2  | 89.4    | 10.8  | 100.2    | 7,902.4                 | 2.4   |
| VIRGINIA | 51119 | MIDDLESEX        | -             | -     | -        | 7,126.3  | 316.0   | 7,442.3  | 260.2   | 24.2  | 284.4    | 7,726.7                 | 2.4   |
| VIRGINIA | 51121 | MONTOMERY        | -             | -     | -        | 431.2    | 43.2    | 474.4    | 49.3    | -     | 49.3     | 523.7                   | 2.7   |
| VIRGINIA | 51125 | NELSON           | -             | -     | -        | 9,191.3  | 1,879.9 | 11,071.2 | 468.9   | 70.8  | 539.7    | 11,610.9                | 2.6   |
| VIRGINIA | 51127 | NEW KENT         | -             | -     | -        | 9,591.6  | 264.0   | 9,855.6  | 301.2   | -     | 301.2    | 10,156.8                | 2.8   |
| VIRGINIA | 51131 | NORTHAMPTON      | -             | -     | -        | 5,384.4  | 625.1   | 6,009.5  | 345.3   | 73.3  | 418.6    | 6,428.1                 | 2.5   |
| VIRGINIA | 51133 | NORTHUMBERLAND   | -             | -     | -        | 8,781.2  | 615.6   | 9,396.8  | 414.4   | 80.6  | 495.0    | 9,891.8                 | 2.4   |
| VIRGINIA | 51135 | NOTTOWAY         | 10.5          | -     | 10.5     | 3,724.8  | 367.3   | 4,092.1  | 341.2   | 34.7  | 375.9    | 4,468.0                 | 2.7   |
| VIRGINIA | 51137 | ORANGE           | 95.7          | 2.3   | 98.0     | 12,128.8 | 822.9   | 12,951.7 | 671.1   | 39.0  | 710.1    | 13,661.8                | 2.8   |
| VIRGINIA | 51139 | PAGE             | 427.1         | 2.5   | 429.6    | 11,615.2 | 711.4   | 12,326.6 | 671.6   | 12.3  | 683.9    | 13,010.5                | 2.8   |
| VIRGINIA | 51145 | POWELLTAN        | -             | -     | -        | 12,358.0 | 472.3   | 12,830.3 | 324.4   | -     | 324.4    | 13,154.7                | 2.9   |
| VIRGINIA | 51147 | PRINCE EDWARD    | 331.6         | 4.1   | 335.7    | 8,759.1  | 695.4   | 9,454.5  | 481.4   | 31.0  | 512.4    | 10,306.6                | 2.8   |
| VIRGINIA | 51149 | PRINCE GEORGE    | 609.6         | 59.3  | 668.9    | 4,026.6  | 180.3   | 4,206.9  | 96.6    | 2.5   | 99.1     | 4,974.9                 | 2.8   |
| VIRGINIA | 51153 | PRINCE WILLIAM   | 3,528.1       | 199.2 | 3,727.3  | 31,506.6 | 747.9   | 32,254.5 | 626.6   | 10.1  | 636.7    | 36,612.6                | 3.2   |
| VIRGINIA | 51157 | RAPPAHANNOCK     | -             | -     | -        | 5,229.4  | 556.1   | 5,785.5  | 387.4   | 38.2  | 425.6    | 6,211.0                 | 2.6   |
| VIRGINIA | 51159 | RICHMOND         | -             | -     | -        | 5,121.2  | 539.3   | 5,660.5  | 377.9   | 106.1 | 484.0    | 6,144.9                 | 2.7   |
| VIRGINIA | 51161 | ROANOKE          | -             | -     | -        | 938.5    | 7.4     | 945.9    | 55.5    | -     | 55.5     | 1,001.4                 | 2.7   |
| VIRGINIA | 51163 | ROCKBRIDGE       | -             | -     | -        | 13,004.9 | 1,289.6 | 14,294.5 | 833.1   | 86.7  | 919.8    | 15,214.3                | 2.8   |
| VIRGINIA | 51165 | ROCKINGHAM       | 201.9         | -     | 201.9    | 35,563.6 | 2,155.6 | 37,719.2 | 3,719.0 | 200.1 | 3,919.1  | 41,840.2                | 2.8   |
| VIRGINIA | 51171 | SHENANDOAH       | 690.6         | 24.0  | 714.6    | 15,463.0 | 1,644.1 | 17,107.1 | 1,183.5 | 55.3  | 1,238.8  | 19,066.0                | 2.5   |
| VIRGINIA | 51177 | SPOTSYLVANIA     | 1,726.2       | 12.0  | 1,738.2  | 22,423.1 | 1,091.0 | 23,514.1 | 829.8   | 9.1   | 838.9    | 26,091.9                | 3.1   |
| VIRGINIA | 51179 | STAFFORD         | 2,138.0       | 40.7  | 2,178.7  | 22,752.0 | 805.9   | 23,557.9 | 249.1   | 2.8   | 251.9    | 25,988.5                | 3.1   |
| VIRGINIA | 51181 | SURRY            | -             | -     | -        | 2,240.6  | 202.1   | 2,442.7  | 201.9   | 11.5  | 213.4    | 2,656.0                 | 2.7   |
| VIRGINIA | 51187 | WARREN           | 885.2         | 2.3   | 887.5    | 12,895.5 | 574.5   | 13,470.0 | 232.3   | 5.7   | 238.0    | 14,595.5                | 2.7   |
| VIRGINIA | 51193 | WESTMORELAND     | 253.5         | 4.5   | 258.0    | 10,481.7 | 930.5   | 11,412.2 | 381.4   | 146.1 | 527.5    | 12,197.7                | 2.6   |
| VIRGINIA | 51199 | YORK             | 8,295.1       | 59.6  | 8,354.7  | 7,531.1  | 85.8    | 7,616.9  | 23.5    | 3.0   | 26.7     | 15,998.3                | 2.7   |
| VIRGINIA | 51510 | ALEXANDRIA       | 65.3          | 236.0 | 301.3    | -        | -       | -        | -       | -     | -        | 301.3                   | 2.0   |
| VIRGINIA | 51530 | BUENA VISTA      | 179.0         | 36.5  | 215.5    | -        | -       | -        | -       | -     | -        | 215.5                   | 2.4   |
| VIRGINIA | 51540 | CHARLOTTESVILLE  | 600.1         | 173.0 | 773.2    | -        | -       | -        | -       | -     | -        | 773.2                   | 3.1   |
| VIRGINIA | 51550 | CHESAPEAKE CITY  | 9,304.8       | 321.2 | 9,626.0  | 73.1     | 0.7     | 73.8     | 10.9    | 0.6   | 11.5     | 9,711.2                 | 3.0   |
| VIRGINIA | 51560 | CLIFTON FORGE    | 10.4          | -     | 10.4     | -        | -       | -        | -       | -     | -        | 10.4                    | 2.8   |
| VIRGINIA | 51570 | COLONIAL HEIGHTS | 45.5          | -     | 45.5     | -        | -       | -        | -       | -     | -        | 45.5                    | 2.0   |
| VIRGINIA | 51580 | COVINGTON        | 26.6          | -     | 26.6     | -        | -       | -        | -       | -     | -        | 26.6                    | 2.6   |
| VIRGINIA | 51600 | FARFAX           | 247.6         | 12.8  | 260.4    | -        | -       | -        | -       | -     | -        | 260.4                   | 2.8   |
| VIRGINIA | 51610 | FALLS CHURCH     | 17.5          | 67.0  | 84.5     | -        | -       | -        | -       | -     | -        | 84.5                    | 2.5   |
| VIRGINIA | 51630 | FREDERICKSBURG   | 169.3         | 12.0  | 181.3    | -        | -       | -        | -       | -     | -        | 181.3                   | 2.1   |
| VIRGINIA | 51650 | HAMPTON CITY     | 2,357.3       | 395.0 | 2,752.3  | -        | -       | -        | -       | -     | -        | 2,752.3                 | 2.2   |

Table 9

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
OTHER NON-SEWERED MEANS OF WASTE DISPOSAL.  
COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES

Average Number of Households and Number of People per Household  
Using Septic and Other non-sewered Treatment

NCRI-CHESAPEAKE, Inc.

| STATE        | FIPS  | COUNTY      | a. HOUSING UNITS |       |          |          |       |          |         |       |          | TOTAL<br>(septic/other) |
|--------------|-------|-------------|------------------|-------|----------|----------|-------|----------|---------|-------|----------|-------------------------|
|              |       |             | Urban            |       |          | Rural    |       |          | Farm    |       |          |                         |
|              |       |             | Septic           | Other | Subtotal | Septic   | Other | Subtotal | Septic  | Other | Subtotal |                         |
| NEW YORK     | 36043 | HERKIMER    | -                | -     | -        | 1,355.0  | 11.4  | 1,366.4  | 101.0   | 0.9   | 101.9    | 1,468.3                 |
| NEW YORK     | 36051 | LIVINGSTON  | -                | -     | -        | 127.8    | 2.7   | 130.5    | 2.9     | 0.1   | 3.0      | 133.5                   |
| NEW YORK     | 36053 | MADISON     | 236.5            | 12.2  | 248.7    | 3,956.5  | 142.0 | 4,098.6  | 271.0   | 8.3   | 279.3    | 4,626.7                 |
| NEW YORK     | 36065 | ONEIDA EAST | 5.9              | 0.8   | 6.7      | 737.0    | 6.9   | 743.9    | 44.5    | 1.3   | 45.8     | 796.4                   |
| NEW YORK     | 36067 | ONONDAGA    | -                | -     | -        | 707.8    | 14.5  | 722.3    | 33.6    | 3.2   | 36.8     | 759.2                   |
| NEW YORK     | 36069 | ONTARIO     | -                | -     | -        | 41.1     | -     | 41.1     | 1.6     | -     | 1.6      | 42.7                    |
| NEW YORK     | 36077 | OTSEGO      | 67.7             | 3.0   | 70.7     | 13,572.8 | 215.2 | 13,788.0 | 639.8   | 36.9  | 676.7    | 14,535.4                |
| NEW YORK     | 36095 | SCHOHARIE   | -                | -     | -        | 371.3    | 16.6  | 388.0    | 11.3    | 1.9   | 13.3     | 401.2                   |
| NEW YORK     | 36097 | SCHUYLER    | -                | -     | -        | 1,328.1  | 48.4  | 1,376.5  | 45.6    | 17.7  | 63.2     | 1,439.7                 |
| NEW YORK     | 36101 | STEUBEN     | 199.1            | -     | 199.1    | 15,154.0 | 710.3 | 15,864.2 | 768.6   | 74.6  | 843.2    | 16,906.5                |
| NEW YORK     | 36107 | TIOGA       | 560.5            | 12.7  | 573.2    | 10,879.3 | 264.0 | 11,143.3 | 355.7   | 27.6  | 383.3    | 12,099.9                |
| NEW YORK     | 36109 | TOMPKINS    | -                | -     | -        | 1,824.4  | 36.1  | 1,860.5  | 51.8    | 4.8   | 56.6     | 1,917.1                 |
| NEW YORK     | 36123 | YATES       | -                | -     | -        | 81.4     | 3.8   | 85.2     | 5.1     | 0.3   | 5.4      | 90.6                    |
| PENNSYLVANIA | 42001 | ADAMS       | 19.3             | -     | 19.3     | 13,048.8 | 578.7 | 13,627.4 | 889.8   | 29.3  | 919.1    | 14,565.9                |
| PENNSYLVANIA | 42009 | BEDFORD     | -                | -     | -        | 12,374.4 | 478.0 | 12,852.4 | 584.3   | 20.0  | 604.3    | 13,456.7                |
| PENNSYLVANIA | 42011 | BERKS       | 0.5              | 0.0   | 0.5      | 3,502.7  | 65.2  | 3,567.8  | 215.8   | 9.8   | 225.6    | 3,793.9                 |
| PENNSYLVANIA | 42013 | BLAIR       | 2,186.0          | 91.8  | 2,277.8  | 10,526.5 | 355.0 | 10,882.5 | 365.1   | 13.9  | 379.0    | 13,539.3                |
| PENNSYLVANIA | 42015 | BRADFORD    | 418.5            | 18.3  | 436.8    | 12,932.0 | 747.6 | 13,679.6 | 846.5   | 44.9  | 891.3    | 15,007.7                |
| PENNSYLVANIA | 42021 | CAMBRIA     | -                | -     | -        | 4,670.3  | 481.9 | 5,152.2  | 131.4   | 7.5   | 138.9    | 5,291.1                 |
| PENNSYLVANIA | 42023 | CAMERON     | 5.3              | -     | 5.3      | 927.3    | 151.7 | 1,079.0  | 3.0     | -     | 3.0      | 1,082.3                 |
| PENNSYLVANIA | 42025 | CARBON      | -                | -     | -        | 0.4      | 0.0   | 0.5      | 0.0     | -     | 0.0      | 0.5                     |
| PENNSYLVANIA | 42027 | CENTRE      | 288.1            | -     | 288.1    | 11,754.2 | 432.4 | 12,186.6 | 715.4   | 20.6  | 736.1    | 13,210.8                |
| PENNSYLVANIA | 42029 | CHESTER     | 40.5             | -     | 40.5     | 6,133.8  | 131.2 | 6,265.0  | 361.1   | 6.8   | 367.9    | 6,673.4                 |
| PENNSYLVANIA | 42033 | CLEARFIELD  | 93.2             | -     | 93.2     | 12,831.9 | 811.5 | 13,643.4 | 183.3   | -     | 183.3    | 13,926.9                |
| PENNSYLVANIA | 42035 | CLINTON     | 6.4              | -     | 6.4      | 4,190.3  | 471.6 | 4,661.8  | 177.6   | 14.8  | 192.4    | 4,867.7                 |
| PENNSYLVANIA | 42037 | COLUMBIA    | 279.2            | 0.0   | 279.2    | 12,090.0 | 332.2 | 12,422.2 | 608.1   | 11.2  | 619.3    | 13,320.8                |
| PENNSYLVANIA | 42041 | CUMBERLAND  | 1,987.1          | 61.2  | 2,048.3  | 15,584.0 | 563.2 | 16,147.2 | 846.6   | 4.7   | 851.3    | 19,046.9                |
| PENNSYLVANIA | 42043 | DAUPHIN     | 2,701.8          | 265.6 | 2,967.4  | 14,483.2 | 473.2 | 14,956.3 | 519.6   | -     | 519.6    | 18,443.4                |
| PENNSYLVANIA | 42047 | ELK         | -                | -     | -        | 1,696.6  | 46.4  | 1,742.9  | 2.2     | -     | 2.2      | 1,745.1                 |
| PENNSYLVANIA | 42055 | FRANKLIN    | 251.4            | -     | 251.4    | 14,635.6 | 696.2 | 15,331.8 | 1,154.2 | 53.6  | 1,207.8  | 16,791.1                |
| PENNSYLVANIA | 42057 | FULTON      | -                | -     | -        | 3,711.3  | 145.0 | 3,856.3  | 266.0   | 8.8   | 274.8    | 4,131.1                 |
| PENNSYLVANIA | 42061 | HUNTINGDON  | -                | -     | -        | 8,714.7  | 472.3 | 9,187.0  | 366.9   | 16.7  | 383.6    | 9,570.6                 |
| PENNSYLVANIA | 42063 | INDIANA     | -                | -     | -        | 985.6    | 88.2  | 1,073.8  | 27.0    | 2.9   | 29.8     | 1,103.6                 |
| PENNSYLVANIA | 42065 | JEFFERSON   | -                | -     | -        | 1.0      | 0.1   | 1.1      | 0.1     | -     | 0.1      | 1.2                     |
| PENNSYLVANIA | 42067 | JUNIATA     | -                | -     | -        | 5,046.3  | 191.9 | 5,238.2  | 370.1   | 33.6  | 403.7    | 5,641.8                 |

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
OTHER NON-SEWERED MEANS OF WASTE DISPOSAL  
COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES

Average Number of Households and Number of People per Household  
Using Septic and Other non-sewered Treatment

NCRI-CHESAPEAKE, Inc.

| STATE        | FIPS  | COUNTY         | a. HOUSING UNITS |       |          |          |         |          |         |       |          | TOTAL<br>(septic/other) |
|--------------|-------|----------------|------------------|-------|----------|----------|---------|----------|---------|-------|----------|-------------------------|
|              |       |                | Urban            |       |          | Rural    |         |          | Farm    |       |          |                         |
|              |       |                | Septic           | Other | Subtotal | Septic   | Other   | Subtotal | Septic  | Other | Subtotal |                         |
| PENNSYLVANIA | 42069 | LACKAWANNA     | 981.9            | 92.5  | 1,074.4  | 7,901.0  | 232.2   | 8,133.2  | 163.0   | -     | 163.0    | 9,370.6                 |
| PENNSYLVANIA | 42071 | LANCASTER      | 2,835.5          | 266.9 | 3,102.4  | 38,382.8 | 1,191.4 | 39,574.2 | 3,481.6 | 251.5 | 3,733.1  | 46,409.7                |
| PENNSYLVANIA | 42075 | LEBANON        | 1,172.5          | 59.4  | 1,232.0  | 10,289.6 | 191.1   | 10,480.6 | 555.5   | 16.1  | 571.7    | 12,284.2                |
| PENNSYLVANIA | 42079 | LUZERNE        | 4,108.6          | 259.1 | 4,367.7  | 17,411.2 | 570.0   | 17,981.2 | 252.3   | -     | 252.3    | 22,601.2                |
| PENNSYLVANIA | 42081 | LYCOMING       | 2,972.8          | 50.6  | 3,023.4  | 15,446.8 | 542.8   | 15,989.6 | 603.0   | 18.0  | 621.0    | 19,634.0                |
| PENNSYLVANIA | 42083 | MCKEAN         | -                | -     | -        | 71.7     | 1.1     | 72.9     | 0.6     | -     | 0.6      | 73.5                    |
| PENNSYLVANIA | 42087 | MIFFLIN        | 29.6             | -     | 29.6     | 6,603.7  | 382.8   | 6,986.5  | 358.5   | 76.8  | 435.3    | 7,449.4                 |
| PENNSYLVANIA | 42093 | MONTOUR        | 70.6             | 3.3   | 73.9     | 2,656.0  | 89.2    | 2,745.2  | 203.3   | 5.2   | 208.4    | 3,027.5                 |
| PENNSYLVANIA | 42097 | NORTHUMBERLAND | 151.6            | 32.7  | 184.3    | 9,876.9  | 347.7   | 10,224.6 | 496.8   | 11.7  | 508.5    | 10,917.4                |
| PENNSYLVANIA | 42099 | PERRY          | 43.3             | -     | 43.3     | 9,236.8  | 609.2   | 9,846.0  | 551.9   | 10.9  | 562.8    | 10,452.1                |
| PENNSYLVANIA | 42105 | POTTER         | -                | -     | -        | 1,191.2  | 142.1   | 1,333.3  | 71.4    | -     | 71.4     | 1,404.7                 |
| PENNSYLVANIA | 42107 | SCHUYLKILL     | 68.1             | 9.8   | 77.9     | 9,551.7  | 557.6   | 10,109.3 | 305.3   | 9.4   | 314.7    | 10,501.9                |
| PENNSYLVANIA | 42109 | SNYDER         | 24.4             | -     | 24.4     | 5,881.2  | 382.1   | 6,263.3  | 428.3   | 82.9  | 511.2    | 6,795.5                 |
| PENNSYLVANIA | 42111 | SOMERSET       | -                | -     | -        | 770.5    | 50.8    | 821.3    | 82.0    | 4.5   | 86.5     | 907.7                   |
| PENNSYLVANIA | 42113 | SULLIVAN       | -                | -     | -        | 1,644.8  | 79.3    | 1,724.1  | 51.2    | 2.0   | 53.2     | 1,777.3                 |
| PENNSYLVANIA | 42115 | SUSQUEHANNA    | -                | -     | -        | 10,009.5 | 491.3   | 10,500.8 | 341.9   | 13.6  | 355.5    | 10,856.3                |
| PENNSYLVANIA | 42117 | TIOGA          | 104.6            | 4.8   | 109.3    | 8,946.0  | 462.1   | 9,408.1  | 674.8   | 26.0  | 700.8    | 10,218.2                |
| PENNSYLVANIA | 42119 | UNION          | 22.1             | -     | 22.1     | 5,319.8  | 117.7   | 5,437.5  | 357.0   | 21.5  | 378.5    | 5,838.0                 |
| PENNSYLVANIA | 42127 | WAYNE          | -                | -     | -        | 322.6    | 16.7    | 339.3    | 23.1    | 1.5   | 24.6     | 364.6                   |
| PENNSYLVANIA | 42131 | WYOMING        | -                | -     | -        | 7,684.4  | 180.9   | 7,865.3  | 225.3   | 4.5   | 229.8    | 8,095.1                 |
| PENNSYLVANIA | 42133 | YORK           | 5,922.4          | 108.1 | 6,030.5  | 39,703.2 | 1,307.2 | 41,010.4 | 1,570.7 | 59.5  | 1,630.1  | 48,571.0                |
| VIRGINIA     | 51001 | ACCOMACK       | -                | -     | -        | 4,665.4  | 526.5   | 5,191.9  | 163.8   | 36.2  | 200.0    | 5,391.9                 |
| VIRGINIA     | 51003 | ALBEMARLE      | 1,526.6          | 9.4   | 1,536.0  | 11,462.8 | 438.9   | 11,901.6 | 556.1   | 39.0  | 595.1    | 14,032.8                |
| VIRGINIA     | 51005 | ALLEGHANY      | -                | -     | -        | 2,675.5  | 298.4   | 2,973.9  | 78.0    | -     | 78.0     | 3,051.9                 |
| VIRGINIA     | 51007 | AMELIA         | -                | -     | -        | 2,395.9  | 217.6   | 2,613.5  | 217.9   | 21.9  | 239.8    | 2,853.3                 |
| VIRGINIA     | 51009 | AMHERST        | 3,079.1          | 24.8  | 3,103.8  | 4,339.6  | 375.9   | 4,715.6  | 193.1   | 17.3  | 210.4    | 8,029.8                 |
| VIRGINIA     | 51011 | APPOMATTOX     | -                | -     | -        | 2,300.2  | 91.3    | 2,391.5  | 116.8   | 3.9   | 120.8    | 2,512.2                 |
| VIRGINIA     | 51013 | ARLINGTON      | 239.0            | 105.0 | 344.0    | -        | -       | -        | -       | -     | -        | 344.0                   |
| VIRGINIA     | 51015 | AUGUSTA        | 1,244.6          | 28.9  | 1,273.5  | 11,573.8 | 719.0   | 12,292.9 | 994.4   | 64.3  | 1,058.7  | 14,625.0                |
| VIRGINIA     | 51017 | BATH           | -                | -     | -        | 917.6    | 236.4   | 1,154.0  | 61.8    | 20.1  | 81.9     | 1,235.9                 |
| VIRGINIA     | 51019 | BEDFORD        | 1,220.7          | 16.2  | 1,236.9  | 1,433.1  | 108.3   | 1,541.4  | 46.9    | 3.5   | 50.4     | 2,828.7                 |
| VIRGINIA     | 51023 | BOTETOURT      | 14.7             | -     | 14.7     | 3,569.8  | 262.1   | 3,831.8  | 239.8   | -     | 239.8    | 4,016.3                 |
| VIRGINIA     | 51029 | BUCKINGHAM     | -                | -     | -        | 3,465.9  | 356.8   | 3,822.6  | 169.7   | 18.0  | 187.7    | 4,010.4                 |
| VIRGINIA     | 51031 | CAMPBELL       | 1,626.7          | 2.1   | 1,628.8  | 2,338.1  | 50.8    | 2,388.9  | 26.4    | 0.4   | 26.8     | 4,044.4                 |
| VIRGINIA     | 51033 | CAROLINE       | -                | -     | -        | 5,164.0  | 483.4   | 5,647.3  | 199.4   | 13.6  | 213.0    | 5,860.3                 |

Table 9

**HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES**

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES |       |                | Average Number of Households and Number of People per Household<br>Using Septic and Other non-sewered Treatment |       |          |          |       |          |        |       |          |                         |
|---|-------|----------------|---|-------|----------|----------|-------|----------|--------|-------|----------|-------------------------|
| NCRI-CHESAPEAKE, Inc.                                     |       |                | a. HOUSING UNITS  |       |          |          |       |          |        |       |          |                         |
| STATE   | FIPS  | COUNTY         | Urban   |       |          | Rural    |       |          | Farm   |       |          | TOTAL<br>(septic/other) |
|   |       |                | Septic  | Other | Subtotal | Septic   | Other | Subtotal | Septic | Other | Subtotal |                         |
| VIRGINIA  | 51036 | CHARLES CITY   | -   | -     | -        | 1,887.9  | 214.9 | 2,098.8  | 43.0   | -     | 43.0     | 2,143.8                 |
| VIRGINIA  | 51037 | CHARLOTTE      | -   | -     | -        | 0.4      | 4.0   | 0.4      | 0.0    | 0.0   | 0.0      | 0.4                     |
| VIRGINIA  | 51041 | CHESTERFIELD   | 8,759.9   | 158.2 | 8,918.1  | 8,526.6  | 121.4 | 8,648.0  | 172.0  | -     | 172.0    | 17,738.1                |
| VIRGINIA  | 51043 | CLARKE         | 92.9  | 0.1   | 93.0     | 2,480.9  | 139.4 | 2,640.3  | 291.4  | 14.3  | 305.7    | 3,039.0                 |
| VIRGINIA  | 51045 | CRAIG          | -   | -     | -        | 980.1    | 91.5  | 1,078.6  | 52.5   | -     | 52.5     | 1,131.1                 |
| VIRGINIA  | 51047 | CULPEPER       | 309.1   | 30.2  | 339.3    | 5,164.9  | 461.8 | 5,626.7  | 299.6  | 26.6  | 326.2    | 6,292.2                 |
| VIRGINIA  | 51049 | CUMBERLAND     | 35.5  | 9.9   | 45.4     | 2,074.3  | 265.1 | 2,339.4  | 218.7  | 32.7  | 251.4    | 2,636.3                 |
| VIRGINIA  | 51053 | DINWIDDIE      | 41.6  | -     | 41.6     | 1,063.6  | 31.1  | 1,101.7  | 68.5   | 2.6   | 71.1     | 1,214.5                 |
| VIRGINIA  | 51057 | ESSEX          | -   | -     | -        | 2,217.3  | 191.5 | 2,410.9  | 128.8  | 22.9  | 151.6    | 2,562.5                 |
| VIRGINIA  | 51059 | FAIRFAX        | 13,874.6  | 545.2 | 14,419.8 | 4,856.0  | 61.4  | 4,924.4  | 36.0   | -     | 36.0     | 19,380.2                |
| VIRGINIA  | 51061 | FAUQUIER       | 159.0   | 1.8   | 160.8    | 10,783.1 | 346.5 | 11,129.6 | 788.4  | 24.7  | 813.1    | 12,103.6                |
| VIRGINIA  | 51065 | FLUVANNA       | -   | -     | -        | 3,128.7  | 230.0 | 3,358.7  | 152.0  | 16.7  | 168.7    | 3,527.4                 |
| VIRGINIA  | 51069 | FREDERICK      | -   | -     | -        | 8,798.1  | 597.4 | 9,395.5  | 341.0  | 17.7  | 358.8    | 9,754.2                 |
| VIRGINIA  | 51071 | GILES          | -   | -     | -        | 88.2     | 4.9   | 95.1     | 17.4   | -     | 17.4     | 112.6                   |
| VIRGINIA  | 51073 | GLOUCESTER     | 2,909.1   | 54.9  | 2,964.0  | 6,411.7  | 411.2 | 6,822.8  | 163.0  | 15.5  | 178.5    | 9,965.3                 |
| VIRGINIA  | 51075 | GOOCHLAND      | -   | -     | -        | 4,102.7  | 304.9 | 4,411.6  | 235.0  | -     | 235.0    | 4,646.6                 |
| VIRGINIA  | 51079 | GREENE         | -   | -     | -        | 2,938.9  | 171.4 | 3,110.3  | 120.4  | 18.2  | 138.6    | 3,248.9                 |
| VIRGINIA  | 51085 | HANOVER        | 3,656.4   | 61.3  | 3,717.8  | 9,497.2  | 390.5 | 10,017.7 | 404.0  | -     | 404.0    | 14,209.4                |
| VIRGINIA  | 51087 | HENRICO        | 3,400.4   | 116.0 | 3,516.4  | 5,223.2  | 175.1 | 5,398.3  | 95.5   | -     | 95.5     | 9,010.2                 |
| VIRGINIA  | 51091 | HIGHLAND       | -   | -     | -        | 609.0    | 135.7 | 744.7    | 146.3  | 39.1  | 185.4    | 930.1                   |
| VIRGINIA  | 51093 | ISLE OF WIGHT  | 229.7   | 1.4   | 231.1    | 3,962.7  | 123.4 | 4,016.0  | 145.3  | 9.5   | 154.8    | 4,471.9                 |
| VIRGINIA  | 51095 | JAMES CITY     | 371.0   | 18.2  | 389.2    | 3,304.0  | 79.8  | 3,383.8  | 65.3   | 1.9   | 67.2     | 3,840.3                 |
| VIRGINIA  | 51097 | KING AND QUEEN | -   | -     | -        | 2,026.0  | 133.8 | 2,159.8  | 147.1  | 20.7  | 167.8    | 2,327.6                 |
| VIRGINIA  | 51099 | KING GEORGE    | -   | -     | -        | 3,223.9  | 145.4 | 3,369.3  | 131.2  | 3.8   | 135.0    | 3,504.3                 |
| VIRGINIA  | 51101 | KING WILLIAM   | 82.1  | -     | 82.1     | 2,346.3  | 170.0 | 2,516.3  | 140.1  | 15.8  | 155.9    | 2,754.3                 |
| VIRGINIA  | 51103 | LANCASTER      | -   | -     | -        | 3,651.0  | 256.0 | 3,907.0  | 81.8   | 10.9  | 92.7     | 3,999.6                 |
| VIRGINIA  | 51107 | LOUDOUN        | 549.3   | 14.6  | 563.9    | 6,283.5  | 276.3 | 6,559.8  | 751.4  | 24.8  | 776.2    | 7,900.0                 |
| VIRGINIA  | 51109 | LOUISA         | -   | -     | -        | 5,981.7  | 558.2 | 6,539.9  | 275.6  | 42.8  | 318.4    | 6,858.3                 |
| VIRGINIA  | 51111 | LUNENBERG      | -   | -     | -        | 0.8      | 0.0   | 0.8      | 0.0    | 0.0   | 0.0      | 0.9                     |
| VIRGINIA  | 51113 | MADISON        | -   | -     | -        | 3,345.6  | 326.1 | 3,711.7  | 256.9  | 22.9  | 279.8    | 3,991.5                 |
| VIRGINIA  | 51115 | MATHEWS        | -   | -     | -        | 3,101.5  | 188.7 | 3,290.3  | 45.8   | 4.2   | 50.0     | 3,340.3                 |
| VIRGINIA  | 51119 | MIDDLESEX      | -   | -     | -        | 2,948.2  | 139.4 | 3,017.7  | 83.1   | 6.5   | 89.6     | 3,177.3                 |
| VIRGINIA  | 51121 | MONTGOMERY     | -   | -     | -        | 161.1    | 18.5  | 179.6    | 14.4   | -     | 14.4     | 194.0                   |
| VIRGINIA  | 51125 | NELSON         | -   | -     | -        | 3,481.3  | 680.3 | 4,161.6  | 178.2  | 51.6  | 229.8    | 4,391.4                 |
| VIRGINIA  | 51127 | NEW KENT       | -   | -     | -        | 3,502.8  | 84.2  | 3,587.0  | 93.0   | -     | 93.0     | 3,680.0                 |

HOUSING UNITS AND DENSITY PER HOUSEHOLD AS  
 URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
 OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
 COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
 COUNTY SUMMARIES

Average Number of Households and Number of People per Household  
 Using Septic and Other non-sewered Treatment

NCRI-CHESAPEAKE, Inc

| STATE    | FIPS  | COUNTY           | a. HOUSING UNITS |       |          |          |       |          |         |       |          | TOTAL<br>(septic/other) |
|----------|-------|------------------|------------------|-------|----------|----------|-------|----------|---------|-------|----------|-------------------------|
|          |       |                  | Urban            |       |          | Rural    |       |          | Farms   |       |          |                         |
|          |       |                  | Septic           | Other | Subtotal | Septic   | Other | Subtotal | Septic  | Other | Subtotal |                         |
| VIRGINIA | 51131 | NORTHAMPTON      | -                | -     | -        | 2,223.2  | 235.4 | 2,458.6  | 114.7   | 20.8  | 135.5    | 2,594.1                 |
| VIRGINIA | 51133 | NORTHUMBERLAND   | -                | -     | -        | 3,687.9  | 277.9 | 3,965.9  | 186.2   | 25.6  | 211.8    | 4,177.6                 |
| VIRGINIA | 51135 | NOTTOWAY         | 3.4              | -     | 3.4      | 1,370.3  | 122.9 | 1,493.1  | 137.4   | 13.5  | 150.9    | 1,647.4                 |
| VIRGINIA | 51137 | ORANGE           | 33.1             | 0.4   | 33.4     | 4,315.3  | 264.0 | 4,579.3  | 292.2   | 17.2  | 309.4    | 4,922.2                 |
| VIRGINIA | 51139 | PAGE             | 128.9            | 2.1   | 130.9    | 4,171.4  | 278.9 | 4,450.3  | 283.3   | 8.4   | 291.7    | 4,872.9                 |
| VIRGINIA | 51141 | POWHATAN         | -                | -     | -        | 4,317.5  | 147.5 | 4,465.0  | 146.0   | -     | 146.0    | 4,611.0                 |
| VIRGINIA | 51147 | PRINCE EDWARD    | 105.2            | 0.6   | 105.8    | 3,212.1  | 224.7 | 3,436.9  | 192.3   | 10.2  | 202.5    | 3,745.2                 |
| VIRGINIA | 51149 | PRINCE GEORGE    | 227.7            | 18.3  | 246.3    | 1,406.7  | 60.5  | 1,467.3  | 39.1    | 1.0   | 40.1     | 1,753.7                 |
| VIRGINIA | 51153 | PRINCE WILLIAM   | 1,125.5          | 74.6  | 1,200.2  | 9,918.0  | 224.3 | 10,142.3 | 191.4   | 4.0   | 202.4    | 11,544.9                |
| VIRGINIA | 51157 | RAPPAHANNOCK     | -                | -     | -        | 1,989.0  | 196.5 | 2,185.5  | 147.5   | 15.0  | 162.6    | 2,348.0                 |
| VIRGINIA | 51159 | RICEMOND         | -                | -     | -        | 1,880.4  | 212.7 | 2,093.1  | 152.7   | 35.0  | 187.7    | 2,280.8                 |
| VIRGINIA | 51181 | ROANOKE          | -                | -     | -        | 342.3    | 3.4   | 345.7    | 25.0    | -     | 25.0     | 370.7                   |
| VIRGINIA | 51163 | ROCKBRIDGE       | -                | -     | -        | 5,007.7  | 578.7 | 5,586.4  | 332.8   | 42.5  | 375.3    | 5,961.7                 |
| VIRGINIA | 51165 | ROCKINGHAM       | 69.1             | -     | 69.1     | 12,715.6 | 877.8 | 13,593.5 | 1,238.8 | 81.7  | 1,320.6  | 14,990.2                |
| VIRGINIA | 51171 | SHENANDOAH       | 208.6            | 16.1  | 224.7    | 5,865.9  | 663.3 | 6,531.2  | 491.8   | 40.5  | 532.3    | 7,288.2                 |
| VIRGINIA | 51177 | SPOTSYLVANIA     | 590.7            | 6.1   | 596.8    | 7,279.3  | 377.0 | 7,656.3  | 268.2   | 5.8   | 274.0    | 8,527.1                 |
| VIRGINIA | 51179 | STAFFORD         | 768.0            | 17.1  | 785.1    | 7,190.5  | 288.1 | 7,478.7  | 106.3   | 2.7   | 109.0    | 8,372.8                 |
| VIRGINIA | 51181 | SURRY            | -                | -     | -        | 848.5    | 67.8  | 916.3    | 73.2    | 4.8   | 78.0     | 994.3                   |
| VIRGINIA | 51187 | WARREN           | 256.5            | 2.2   | 258.7    | 4,756.1  | 228.5 | 4,984.7  | 85.2    | 3.6   | 88.8     | 5,332.2                 |
| VIRGINIA | 51193 | WESTMORELAND     | 96.0             | 3.5   | 99.4     | 3,974.0  | 356.1 | 4,330.0  | 180.4   | 35.0  | 215.4    | 4,544.8                 |
| VIRGINIA | 51199 | YORK             | 3,080.7          | 15.8  | 3,096.5  | 2,741.3  | 28.6  | 2,769.9  | 9.9     | 0.6   | 10.5     | 3,176.9                 |
| VIRGINIA | 51510 | ALEXANDRIA       | 67.6             | 80.8  | 148.4    | -        | -     | -        | -       | -     | -        | 148.4                   |
| VIRGINIA | 51530 | BUENA VISTA      | 74.6             | 23.2  | 97.8     | -        | -     | -        | -       | -     | -        | 97.8                    |
| VIRGINIA | 51540 | CHARLOTTESVILLE  | 212.1            | 34.5  | 246.6    | -        | -     | -        | -       | -     | -        | 246.6                   |
| VIRGINIA | 51550 | CHESAPEAKE CITY  | 3,097.5          | 111.9 | 3,209.4  | 23.0     | 0.3   | 23.3     | 2.9     | 0.1   | 3.2      | 3,236.0                 |
| VIRGINIA | 51560 | CLIFTON FORGE    | 3.7              | -     | 3.7      | -        | -     | -        | -       | -     | -        | 3.7                     |
| VIRGINIA | 51370 | COLONIAL HEIGHTS | 22.5             | -     | 22.5     | -        | -     | -        | -       | -     | -        | 22.5                    |
| VIRGINIA | 51580 | COVINGTON        | 10.3             | -     | 10.3     | -        | -     | -        | -       | -     | -        | 10.3                    |
| VIRGINIA | 51600 | FAIRFAX          | 88.1             | 4.8   | 92.9     | -        | -     | -        | -       | -     | -        | 92.9                    |
| VIRGINIA | 51610 | FALLS CHURCH     | 7.7              | 25.6  | 33.3     | -        | -     | -        | -       | -     | -        | 33.3                    |
| VIRGINIA | 51630 | FREDERICKSBURG   | 76.8             | 8.4   | 85.2     | -        | -     | -        | -       | -     | -        | 85.2                    |
| VIRGINIA | 51650 | HAMPTON CITY     | 1,159.4          | 97.8  | 1,257.2  | -        | -     | -        | -       | -     | -        | 1,257.2                 |
| VIRGINIA | 51660 | HARRISONBURG     | 448.5            | 16.4  | 464.9    | -        | -     | -        | -       | -     | -        | 464.9                   |
| VIRGINIA | 51670 | HOPEWELL         | 123.4            | 94.4  | 217.8    | -        | -     | -        | -       | -     | -        | 217.8                   |
| VIRGINIA | 51678 | LEXINGTON        | 9.5              | -     | 9.5      | -        | -     | -        | -       | -     | -        | 9.5                     |

Table 9

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES

Average Number of Households and Number of People per Household  
Using Septic and Other non-sewered Treatment

NCRI-CHESAPEAKE, Inc.

|               |       |                    | a. HOUSING UNITS |          |           |             |          |             |          |         |          |                         |
|---------------|-------|--------------------|------------------|----------|-----------|-------------|----------|-------------|----------|---------|----------|-------------------------|
| STATE         | FIPS  | COUNTY             | Urban            |          |           | Rural       |          |             | Farm     |         |          | TOTAL<br>(septic/other) |
|               |       |                    | Septic           | Other    | Subtotal  | Septic      | Other    | Subtotal    | Septic   | Other   | Subtotal |                         |
| VIRGINIA      | 51680 | LYNCHBURG          | 4,006.1          | 35.2     | 4,041.3   | -           | -        | -           | -        | -       | -        | 4,041.3                 |
| VIRGINIA      | 51683 | MANASSES CITY      | 125.1            | 9.0      | 134.8     | -           | -        | -           | -        | -       | -        | 134.8                   |
| VIRGINIA      | 51685 | MANASSES PARK CIT  | -                | -        | -         | -           | -        | -           | -        | -       | -        | -                       |
| VIRGINIA      | 51700 | NEWPORT NEWS CIT   | 1,656.1          | 142.9    | 1,799.0   | -           | -        | -           | -        | -       | -        | 1,799.0                 |
| VIRGINIA      | 51710 | NORFOLK CITY       | 704.6            | 201.3    | 905.8     | -           | -        | -           | -        | -       | -        | 905.8                   |
| VIRGINIA      | 51730 | PETERSBURG         | 105.2            | 28.2     | 133.4     | -           | -        | -           | -        | -       | -        | 133.4                   |
| VIRGINIA      | 51735 | POQUOSON           | 1,053.2          | 4.7      | 1,057.8   | -           | -        | -           | -        | -       | -        | 1,057.8                 |
| VIRGINIA      | 51740 | PORTSMOUTH CITY    | 346.5            | 120.4    | 466.9     | -           | -        | -           | -        | -       | -        | 466.9                   |
| VIRGINIA      | 51760 | RICHMOND CITY      | 1,608.2          | 210.8    | 1,819.0   | -           | -        | -           | -        | -       | -        | 1,819.0                 |
| VIRGINIA      | 51790 | STAUNTON           | 286.6            | 38.2     | 324.9     | 23.4        | -        | 23.4        | 6.9      | -       | 6.9      | 355.2                   |
| VIRGINIA      | 51800 | SUFFOLK CITY       | 4,854.9          | 324.8    | 5,179.8   | 1,309.3     | 61.8     | 1,371.1     | 67.6     | 8.8     | 76.5     | 6,627.3                 |
| VIRGINIA      | 51810 | VIRGINIA BEACH CIT | 4,513.9          | 120.6    | 4,634.5   | -           | -        | -           | -        | -       | -        | 4,634.5                 |
| VIRGINIA      | 51820 | WAYNESBORO         | 450.4            | 36.4     | 486.8     | -           | -        | -           | -        | -       | -        | 486.8                   |
| VIRGINIA      | 51830 | WILLIAMSBURG       | 126.5            | 6.6      | 133.1     | -           | -        | -           | -        | -       | -        | 133.1                   |
| VIRGINIA      | 51840 | WINCHESTER         | 269.8            | -        | 269.8     | -           | -        | -           | -        | -       | -        | 269.8                   |
| WEST VIRGINIA | 54003 | BERKELEY           | 265.1            | 28.4     | 293.6     | 10,790.8    | 557.7    | 11,448.5    | 274.1    | 34.9    | 309.0    | 12,051.0                |
| WEST VIRGINIA | 54023 | GRANT              | -                | -        | -         | 2,221.3     | 224.3    | 2,445.7     | 180.4    | 27.5    | 208.0    | 2,653.6                 |
| WEST VIRGINIA | 54025 | GREENBRIAR         | 0.1              | -        | 0.1       | 0.6         | 0.1      | 0.7         | 0.0      | -       | 0.0      | 0.8                     |
| WEST VIRGINIA | 54027 | HAMPSHIRE          | -                | -        | -         | 4,167.4     | 392.9    | 4,760.3     | 257.9    | 66.0    | 324.0    | 5,084.3                 |
| WEST VIRGINIA | 54031 | HARDY              | -                | -        | -         | 2,297.2     | 441.1    | 2,738.3     | 223.6    | 71.3    | 294.9    | 3,033.2                 |
| WEST VIRGINIA | 54037 | JEFFERSON          | 66.4             | -        | 66.4      | 6,958.6     | 168.0    | 7,126.6     | 287.3    | 15.0    | 302.3    | 7,495.3                 |
| WEST VIRGINIA | 54057 | MINERAL            | 626.7            | 32.6     | 659.3     | 3,757.2     | 119.3    | 3,876.5     | 155.7    | 5.8     | 161.5    | 4,697.4                 |
| WEST VIRGINIA | 54063 | MONROE             | -                | -        | -         | 215.7       | 35.9     | 251.6       | 25.0     | 0.5     | 25.6     | 277.2                   |
| WEST VIRGINIA | 54065 | MORGAN             | -                | -        | -         | 3,258.5     | 163.4    | 3,422.0     | 59.4     | 6.0     | 65.4     | 3,487.4                 |
| WEST VIRGINIA | 54071 | PENDLETON          | -                | -        | -         | 1,793.8     | 457.4    | 2,251.2     | 227.4    | 102.6   | 330.0    | 2,581.2                 |
| WEST VIRGINIA | 54073 | POCAHONTAS         | -                | -        | -         | 0.7         | 0.1      | 0.8         | 0.1      | 0.0     | 0.1      | 0.9                     |
| WEST VIRGINIA | 54077 | PRESTON            | -                | -        | -         | 15.1        | 1.0      | 16.1        | 1.0      | 0.1     | 1.1      | 17.2                    |
| WEST VIRGINIA | 54083 | RANDOLPH           | -                | -        | -         | 0.6         | 0.1      | 0.6         | 0.1      | -       | 0.1      | 0.7                     |
| WEST VIRGINIA | 54093 | TUCKER             | -                | -        | -         | 1.9         | 0.7      | 2.6         | 0.0      | -       | 0.0      | 2.6                     |
| Grand Total   |       |                    | 193,784.6        | 11,404.4 | 205,189.0 | 1,021,629.8 | 46,661.3 | 1,068,291.1 | 30,032.2 | 3,120.7 | 33,152.9 | 1,326,633.0             |

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES |       |                | b. POPULATION |          |          |          |         |          |         |       |          | TOTAL<br>(septic/other) | c. POPULATION<br>PER<br>HOUSEHOLD<br>(septic/other) |
|---|-------|----------------|---------------|----------|----------|----------|---------|----------|---------|-------|----------|-------------------------|---|
| STATE   | FIPS  | COUNTY         | Urban         |          |          | Rural    |         |          | Farm    |       |          |                         |   |
|   |       |                | Septic        | Other    | Subtotal | Septic   | Other   | Subtotal | Septic  | Other | Subtotal |                         |   |
| DELAWARE  | 10001 | KENT           | 6.4           | 0.5      | 6.9      | 11,499.8 | 268.6   | 13,768.4 | 880.0   | 37.1  | 917.0    | 14,692.3                | 2.9   |
| DELAWARE  | 10003 | NEW CASTLE     | 496.1         | 0.3      | 496.4    | 1,215.0  | 21.8    | 3,236.9  | 150.6   | 4.1   | 154.6    | 1,887.9                 | 3.0   |
| DELAWARE  | 10005 | SUSSEX         | 1,122.2       | 100.2    | 1,222.4  | 29,766.7 | 1,077.3 | 30,844.0 | 1,587.7 | 166.6 | 1,754.3  | 33,820.6                | 2.8   |
| DISTRICT OF COLUMBIA                                      | 11001 | WASHINGTON     | 1,416.6       | 4,063.0  | 5,479.6  | -        | -       | -        | -       | -     | -        | 5,479.6                 | 3.2   |
| MARYLAND  | 24001 | ALLEGANY       | 2,128.4       | 90.3     | 2,218.7  | 5,936.7  | 460.4   | 10,397.1 | 225.6   | 25.4  | 250.9    | 12,866.7                | 2.7   |
| MARYLAND  | 24003 | ANNE ARUNDEL   | 71,202.9      | 1,586.1  | 72,788.9 | 35,355.7 | 541.1   | 35,896.8 | 1,233.8 | 41.9  | 1,275.7  | 109,961.5               | 2.9   |
| MARYLAND  | 24005 | BALTIMORE      | 30,870.0      | 1,262.0  | 32,132.0 | 55,811.4 | 977.4   | 56,788.8 | 1,719.8 | -     | 1,719.8  | 81,640.5                | 2.9   |
| MARYLAND  | 24009 | CALVERT        | 5,213.1       | 36.5     | 5,249.6  | 37,892.7 | 1,242.7 | 39,135.4 | 949.3   | 190.5 | 1,139.8  | 45,524.8                | 3.1   |
| MARYLAND  | 24011 | CAROLINE       | 308.6         | 3.7      | 304.3    | 15,447.6 | 682.9   | 16,130.5 | 1,943.7 | 22.0  | 1,965.7  | 14,400.5                | 2.8   |
| MARYLAND  | 24013 | CARROLL        | 5,048.7       | 58.0     | 5,098.7  | 65,538.8 | 1,478.7 | 67,017.6 | 2,922.4 | -     | 2,922.4  | 79,038.7                | 3.0   |
| MARYLAND  | 24015 | CECIL          | 1,048.9       | 95.7     | 1,144.5  | 31,827.1 | 1,127.0 | 32,954.0 | 1,420.3 | 7.6   | 1,427.9  | 41,526.5                | 2.9   |
| MARYLAND  | 24017 | CHARLES        | 6,721.0       | 183.3    | 6,904.6  | 31,535.0 | 2,686.7 | 34,221.7 | 1,228.0 | 110.9 | 1,338.9  | 42,463.2                | 3.1   |
| MARYLAND  | 24019 | DORCHESTER     | 68.2          | 15.5     | 75.7     | 15,412.1 | 922.2   | 16,334.3 | 735.9   | 71.3  | 807.2    | 14,217.2                | 2.5   |
| MARYLAND  | 24021 | FREDERICK      | 18,793.1      | 398.1    | 19,191.4 | 41,509.6 | 1,755.3 | 43,264.9 | 2,929.0 | -     | 2,929.0  | 71,383.3                | 3.1   |
| MARYLAND  | 24023 | GARRETT        | -             | -        | -        | 1,824.0  | 171.9   | 3,996.0  | 278.4   | 27.7  | 306.1    | 4,302.0                 | 2.9   |
| MARYLAND  | 24025 | HARFORD        | 20,856.3      | 125.1    | 20,982.2 | 48,920.9 | 1,334.9 | 50,255.8 | 1,101.4 | -     | 1,101.4  | 72,339.4                | 3.0   |
| MARYLAND  | 24027 | HOWARD         | 7,128.1       | 147.1    | 7,276.9  | 26,453.1 | 463.6   | 26,916.7 | 866.9   | -     | 866.9    | 35,060.5                | 3.1   |
| MARYLAND  | 24029 | KENT           | 335.6         | 15.0     | 350.6    | 7,358.0  | 562.6   | 7,920.6  | 1,061.7 | 17.8  | 1,079.5  | 9,350.8                 | 2.6   |
| MARYLAND  | 24031 | MONTOOMERY     | 20,533.7      | 1,279.1  | 21,813.1 | 27,650.6 | 381.7   | 28,032.4 | 1,072.6 | -     | 1,072.6  | 50,918.0                | 3.0   |
| MARYLAND  | 24033 | PRINCE GEORGES | 15,532.3      | 2,204.1  | 17,737.0 | 9739.2   | 357.9   | 10,097.1 | 601.3   | -     | 601.3    | 28,435.5                | 2.9   |
| MARYLAND  | 24035 | QUEEN ANNES    | -             | -        | -        | 22,314.9 | 687.6   | 23,002.4 | 1,101.6 | 7.5   | 1,109.1  | 24,111.6                | 2.8   |
| MARYLAND  | 24037 | SAINT MARY'S   | 7,652.7       | 80.1     | 7,732.1  | 40,491.0 | 1,423.6 | 41,914.5 | 1,847.8 | 536.0 | 2,383.8  | 52,031.1                | 3.0   |
| MARYLAND  | 24039 | SOMERSET       | 49.7          | 3.5      | 53.2     | 10,808.2 | 395.4   | 11,203.6 | 788.3   | 40.0  | 828.4    | 12,083.2                | 2.6   |
| MARYLAND  | 24041 | TALBOT         | 547.7         | 38.7     | 586.1    | 14,442.5 | 298.8   | 14,741.3 | 1,133.8 | 5.5   | 1,139.3  | 16,467.0                | 2.5   |
| MARYLAND  | 24043 | WASHINGTON     | 9,587.1       | 80.0     | 9,667.1  | 36,037.4 | 1,319.2 | 37,356.6 | 1,417.4 | 151.6 | 1,569.0  | 48,612.7                | 2.8   |
| MARYLAND  | 24045 | WICOMICO       | 568.5         | 77.2     | 645.7    | 36,009.7 | 648.3   | 36,658.0 | 1,675.6 | 63.9  | 1,739.5  | 39,043.2                | 2.7   |
| MARYLAND  | 24047 | WORCESTER      | 136.7         | 4.6      | 141.3    | 6,292.4  | 214.9   | 6,507.3  | 527.4   | 25.6  | 553.0    | 7,201.6                 | 2.6   |
| MARYLAND  | 24510 | BALTIMORE CITY | 5,382.4       | 10,437.2 | 15,819.6 | -        | -       | -        | -       | -     | -        | 15,819.6                | 3.8   |
| NEW YORK  | 36003 | ALLEGANY       | 319.6         | -        | 319.6    | 2,124.3  | 35.5    | 2,159.7  | 83.7    | 3.4   | 87.1     | 2,166.5                 | 2.6   |
| NEW YORK  | 36007 | BROOME         | 13,389.0      | 91.4     | 13,480.3 | 50,344.5 | 397.8   | 50,742.3 | 714.1   | 136.0 | 850.1    | 64,772.7                | 2.9   |
| NEW YORK  | 36011 | CAYUGA         | -             | -        | -        | 45.8     | 0.0     | 45.8     | 3.7     | -     | 3.7      | 49.5                    | 3.2   |
| NEW YORK  | 36015 | CHENANGO       | 11,972.9      | 145.8    | 12,118.7 | 20,178.3 | 231.9   | 20,410.2 | 348.6   | 64.9  | 413.5    | 32,942.3                | 2.8   |
| NEW YORK  | 36017 | CHENANGO       | 102.0         | 5.6      | 107.6    | 34,131.8 | 1,044.3 | 35,176.2 | 1,722.7 | 31.3  | 1,754.0  | 37,057.7                | 2.8   |
| NEW YORK  | 36023 | CORTLAND       | 1,042.5       | 23.4     | 1,065.9  | 17,186.7 | 476.3   | 17,663.0 | 1,056.4 | 37.8  | 1,094.2  | 20,043.1                | 2.9   |
| NEW YORK  | 36025 | DELAWARE       | 64.5          | -        | 64.5     | 8,142.3  | 178.6   | 8,320.9  | 546.9   | 25.3  | 572.2    | 9,257.6                 | 2.7   |
| NEW YORK  | 36043 | HERKIMER       | -             | -        | -        | 3,121.5  | 31.4    | 3,152.9  | 329.2   | 1.7   | 330.9    | 4,183.8                 | 2.8   |
| NEW YORK  | 36051 | LIVINGSTON     | -             | -        | -        | 152.1    | 6.1     | 158.2    | 7.8     | 0.1   | 8.0      | 166.2                   | 2.7   |
| NEW YORK  | 36053 | MADISON        | 1,463.6       | 53.4     | 1,517.0  | 10,381.6 | 347.3   | 10,728.9 | 531.1   | 14.0  | 545.1    | 12,990.9                | 2.8   |
| NEW YORK  | 36065 | ONEIDA EAST    | 16.1          | 2.0      | 18.1     | 2,196.5  | 19.9    | 2,216.4  | 126.5   | 1.9   | 128.3    | 2,362.9                 | 3.0   |
| NEW YORK  | 36067 | ONONDAGA       | -             | -        | -        | 1,887.8  | 40.1    | 1,927.9  | 127.1   | 6.3   | 133.4    | 2,161.3                 | 2.8   |
| NEW YORK  | 36069 | ONTARIO        | -             | -        | -        | 111.2    | -       | 111.2    | 3.0     | -     | 3.0      | 114.2                   | 2.7   |
| NEW YORK  | 36077 | OTSEGO         | 158.9         | 11.0     | 169.9    | 36,358.8 | 542.2   | 36,901.0 | 1,992.1 | 59.2  | 2,051.3  | 39,122.3                | 2.7   |
| NEW YORK  | 36095 | SCHUYLER       | -             | -        | -        | 869.7    | 41.2    | 910.9    | 39.6    | 3.1   | 42.7     | 1,033.6                 | 2.6   |

Table 9

**HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
COUNTY SUMMARIES**

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES |       |                |               |         |          |           |         |           |          |         |          |                         |   |
|---|-------|----------------|---------------|---------|----------|-----------|---------|-----------|----------|---------|----------|-------------------------|---|
| NCRI-CHESAPEAKE, Inc.                                     |       |                |               |         |          |           |         |           |          |         |          |                         |   |
| STATE   | FIPS  | COUNTY         | b. POPULATION |         |          |           |         |           |          |         |          | TOTAL<br>(septic/other) | c. POPULATION<br>PER<br>HOUSEHOLD<br>(septic/other) |
|   |       |                | Urban         |         |          | Rural     |         |           | Farm     |         |          |                         |   |
|   |       |                | Septic        | Other   | Subtotal | Septic    | Other   | Subtotal  | Septic   | Other   | Subtotal |                         |   |
| NEW YORK  | 36097 | SCHUYLER       | -             | -       | -        | 3,802.5   | 121.0   | 3,923.5   | 123.8    | 44.0    | 167.8    | 4,091.3                 | 2.8   |
| NEW YORK  | 36101 | STEBEN         | 480.3         | -       | 480.3    | 42,623.4  | 2,023.0 | 44,646.4  | 2,369.8  | 349.4   | 2,719.2  | 47,845.9                | 2.8   |
| NEW YORK  | 36107 | TIOGA          | 1,724.5       | 58.3    | 1,782.8  | 30,908.7  | 719.8   | 31,628.6  | 1,204.2  | 55.9    | 1,260.1  | 34,671.4                | 2.9   |
| NEW YORK  | 36109 | TOMPKINS       | -             | -       | -        | 4,858.4   | 90.4    | 4,948.9   | 156.2    | 7.6     | 163.8    | 5,112.7                 | 2.7   |
| NEW YORK  | 36123 | YATES          | -             | -       | -        | 222.9     | 9.9     | 232.8     | 18.7     | 1.6     | 20.3     | 253.0                   | 2.8   |
| PENNSYLVANIA  | 42001 | ADAMS          | 48.3          | -       | 48.3     | 37,494.8  | 1,376.2 | 38,871.0  | 2,681.0  | 68.1    | 2,749.2  | 41,668.4                | 2.9   |
| PENNSYLVANIA  | 42009 | BEDFORD        | -             | -       | -        | 34,106.2  | 1,100.3 | 35,206.5  | 1,963.2  | 48.2    | 2,011.4  | 37,217.9                | 2.8   |
| PENNSYLVANIA  | 42011 | BERKS          | 2.0           | 0.1     | 2.1      | 9,962.6   | 154.7   | 10,117.3  | 855.2    | 34.3    | 889.5    | 11,008.9                | 2.9   |
| PENNSYLVANIA  | 42013 | BLAIR          | 5,609.8       | 181.7   | 5,791.6  | 29,215.0  | 860.5   | 30,075.5  | 1,141.4  | 74.0    | 1,215.4  | 37,082.5                | 2.7   |
| PENNSYLVANIA  | 42015 | BRADFORD       | 1,009.8       | 28.0    | 1,037.8  | 36,411.3  | 2,163.2 | 38,574.5  | 2,449.9  | 123.7   | 2,573.6  | 42,185.9                | 2.8   |
| PENNSYLVANIA  | 42021 | CAMBRIA        | -             | -       | -        | 14,062.4  | 1,185.7 | 15,248.1  | 388.9    | 15.6    | 404.5    | 15,652.6                | 3.0   |
| PENNSYLVANIA  | 42023 | CAMERON        | 12.8          | -       | 12.8     | 2,483.8   | 425.6   | 2,909.4   | 4.9      | -       | 4.9      | 2,927.2                 | 2.7   |
| PENNSYLVANIA  | 42025 | CARBON         | -             | -       | -        | 1.2       | 0.0     | 1.2       | 0.0      | 0.0     | 0.0      | 1.2                     | 2.7   |
| PENNSYLVANIA  | 42027 | CENTRE         | 1,098.2       | -       | 1,098.2  | 32,903.3  | 983.9   | 33,889.1  | 1,878.3  | 106.6   | 1,984.9  | 36,972.2                | 2.8   |
| PENNSYLVANIA  | 42029 | CHESTER        | 124.2         | -       | 124.2    | 18,445.7  | 384.4   | 18,830.1  | 1,386.7  | 32.3    | 1,419.0  | 20,373.3                | 3.1   |
| PENNSYLVANIA  | 42033 | CLARFIELD      | 313.5         | -       | 313.5    | 35,076.1  | 2,220.8 | 37,296.9  | 512.5    | -       | 512.5    | 38,122.9                | 2.7   |
| PENNSYLVANIA  | 42035 | CLINTON        | 18.4          | -       | 18.4     | 11,579.7  | 1,314.4 | 12,894.1  | 637.5    | 70.8    | 708.3    | 13,620.8                | 2.8   |
| PENNSYLVANIA  | 42037 | COLUMBIA       | 652.0         | -       | 652.0    | 32,401.1  | 737.2   | 33,138.4  | 1,784.8  | 33.5    | 1,818.3  | 35,608.7                | 2.7   |
| PENNSYLVANIA  | 42041 | CUMBERLAND     | 5,830.1       | 130.0   | 6,060.2  | 44,619.8  | 1,257.5 | 45,877.3  | 2,493.9  | 21.6    | 2,515.5  | 54,453.0                | 2.9   |
| PENNSYLVANIA  | 42043 | DAUPHIN        | 7,851.1       | 103.3   | 8,654.4  | 40,533.7  | 1,279.2 | 41,812.9  | 1,702.2  | -       | 1,702.2  | 52,169.5                | 2.8   |
| PENNSYLVANIA  | 42047 | ELK            | -             | -       | -        | 4,751.3   | 134.8   | 4,886.1   | 4.7      | -       | 4.7      | 4,890.7                 | 2.8   |
| PENNSYLVANIA  | 42055 | FRANKLIN       | 629.5         | -       | 629.5    | 42,087.7  | 1,671.1 | 43,758.8  | 4,023.4  | 152.0   | 4,175.4  | 48,563.7                | 2.9   |
| PENNSYLVANIA  | 42057 | FULTON         | -             | -       | -        | 10,340.2  | 335.9   | 10,676.1  | 743.8    | 19.2    | 763.0    | 11,439.1                | 2.8   |
| PENNSYLVANIA  | 42061 | HUNTINGDON     | -             | -       | -        | 23,938.4  | 1,084.6 | 25,023.1  | 1,179.2  | 39.0    | 1,218.2  | 26,241.3                | 2.7   |
| PENNSYLVANIA  | 42063 | INDIANA        | -             | -       | -        | 2,843.1   | 257.4   | 3,100.5   | 75.9     | 18.6    | 94.5     | 3,194.9                 | 2.9   |
| PENNSYLVANIA  | 42065 | JEFFERSON      | -             | -       | -        | 2.8       | 0.4     | 3.2       | 0.3      | -       | 0.3      | 3.6                     | 2.9   |
| PENNSYLVANIA  | 42067 | JUNIATA        | -             | -       | -        | 14,049.3  | 626.6   | 14,675.9  | 1,050.5  | 128.3   | 1,178.8  | 15,854.6                | 2.8   |
| PENNSYLVANIA  | 42069 | LACKAWANNA     | 2,898.7       | 313.5   | 3,212.2  | 22,292.9  | 721.2   | 23,014.1  | 434.9    | -       | 434.9    | 26,661.2                | 2.8   |
| PENNSYLVANIA  | 42071 | LANCASTER      | 8,673.6       | 1,311.0 | 9,984.7  | 116,857.1 | 3,276.1 | 120,133.2 | 15,921.7 | 1,164.7 | 17,086.5 | 147,204.3               | 3.2   |
| PENNSYLVANIA  | 42075 | LEBANON        | 3,264.8       | 100.7   | 3,365.5  | 29,832.6  | 428.3   | 30,260.9  | 1,751.5  | 102.8   | 1,854.4  | 35,480.7                | 2.9   |
| PENNSYLVANIA  | 42079 | LUZERNE        | 11,568.6      | 657.2   | 12,225.9 | 48,173.1  | 1,438.5 | 49,611.6  | 788.3    | -       | 788.3    | 62,625.8                | 2.8   |
| PENNSYLVANIA  | 42081 | LYCOMING       | 7,207.3       | 216.6   | 7,424.0  | 43,469.0  | 1,569.6 | 45,038.6  | 1,652.6  | 58.7    | 1,711.3  | 54,173.8                | 2.8   |
| PENNSYLVANIA  | 42083 | MCKEAN         | -             | -       | -        | 188.1     | 3.0     | 191.1     | 2.9      | -       | 2.9      | 194.0                   | 2.6   |
| PENNSYLVANIA  | 42087 | MIFFLIN        | 77.7          | -       | 77.7     | 18,506.2  | 1,194.2 | 19,700.3  | 1,274.1  | 372.7   | 1,646.8  | 21,424.8                | 2.9   |
| PENNSYLVANIA  | 42093 | MONTOUR        | 112.0         | 7.1     | 119.0    | 7,588.3   | 205.5   | 7,793.8   | 639.1    | 15.9    | 655.0    | 8,567.9                 | 2.8   |
| PENNSYLVANIA  | 42097 | NORTHUMBERLAND | 311.3         | 73.4    | 384.7    | 27,315.8  | 796.5   | 28,112.3  | 1,556.5  | 35.2    | 1,591.8  | 30,088.7                | 2.8   |
| PENNSYLVANIA  | 42099 | PERRY          | 105.3         | -       | 105.3    | 26,785.2  | 1,405.3 | 28,190.5  | 1,615.5  | 50.1    | 1,665.6  | 29,964.3                | 2.9   |
| PENNSYLVANIA  | 42105 | POTTER         | -             | -       | -        | 3,190.5   | 404.9   | 3,595.4   | 250.2    | -       | 250.2    | 3,845.6                 | 2.7   |
| PENNSYLVANIA  | 42107 | SCHUYLKILL     | 191.7         | 53.3    | 245.0    | 25,452.5  | 1,379.2 | 26,831.7  | 809.0    | 35.4    | 844.4    | 27,921.1                | 2.7   |
| PENNSYLVANIA  | 42109 | SNYDER         | 61.4          | -       | 61.4     | 16,798.9  | 1,282.3 | 18,081.2  | 1,603.3  | 467.8   | 2,071.1  | 20,213.7                | 3.0   |
| PENNSYLVANIA  | 42111 | SOMERSET       | -             | -       | -        | 2,228.8   | 121.7   | 2,350.5   | 275.6    | 11.3    | 286.9    | 2,637.4                 | 2.9   |
| PENNSYLVANIA  | 42113 | SULLYVAN       | -             | -       | -        | 4,228.4   | 197.8   | 4,426.3   | 155.1    | 5.0     | 160.1    | 4,586.3                 | 2.6   |
| PENNSYLVANIA  | 42115 | SUSQUEHANNA    | -             | -       | -        | 27,819.5  | 1,383.4 | 29,202.9  | 1,078.7  | 35.0    | 1,113.6  | 30,316.5                | 2.8   |

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
 URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
 OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
 COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
 COUNTY SUMMARIES

NCRI-CHESAPEAKE, Inc.

| STATE        | FIPS  | COUNTY         | b. POPULATION |         |          |           |         |           |         |       |          | TOTAL<br>(septic/other) | c. POPULATION<br>PER<br>HOUSEHOLD<br>(septic/other) |  |  |
|--------------|-------|----------------|---------------|---------|----------|-----------|---------|-----------|---------|-------|----------|-------------------------|---|--|--|
|              |       |                | Urban         |         |          | Rural     |         |           | Farm    |       |          |                         |   |  |  |
|              |       |                | Septic        | Other   | Subtotal | Septic    | Other   | Subtotal  | Septic  | Other | Subtotal |                         |   |  |  |
| PENNSYLVANIA | 42117 | TIOGA          | 239.4         | 7.1     | 246.6    |           |         |           |         |       |          |                         |   |  |  |
| PENNSYLVANIA | 42119 | UNION          | 51.4          | -       | 51.4     | 24,372.9  | 1,237.7 | 25,610.6  | 2,157.9 | 65.8  | 2,223.8  | 21,081.0                | 2.7   |  |  |
| PENNSYLVANIA | 42127 | WAYNE          | -             | -       | -        | 15,247.6  | 395.0   | 15,642.6  | 1,402.8 | 117.7 | 1,520.4  | 17,220.4                | 2.9   |  |  |
| PENNSYLVANIA | 42131 | WYOMING        | -             | -       | -        | 911.0     | 50.7    | 961.7     | 62.7    | 2.9   | 65.6     | 1,027.3                 | 2.8   |  |  |
| PENNSYLVANIA | 42133 | YORK           | 16,774.5      | 225.5   | 17,000.0 | 21,430.1  | 483.5   | 21,913.7  | 695.4   | 11.1  | 706.5    | 22,620.2                | 2.8   |  |  |
| VIRGINIA     | 51001 | ACCOMACK       | -             | -       | -        | 112,601.9 | 3,623.1 | 116,225.0 | 4,641.9 | 61.1  | 4,703.0  | 137,928.0               | 2.8   |  |  |
| VIRGINIA     | 51003 | ALBEMARLE      | 4,217.4       | 42.0    | 4,259.4  | 11,508.4  | 1,343.3 | 12,851.8  | 443.5   | 108.4 | 551.9    | 13,403.7                | 2.5   |  |  |
| VIRGINIA     | 51005 | ALLEGHANY      | -             | -       | -        | 31,807.3  | 1,194.2 | 32,801.4  | 1,395.7 | 68.7  | 1,464.4  | 38,525.2                | 2.7   |  |  |
| VIRGINIA     | 51007 | ANGELIA        | -             | -       | -        | 7,97.4    | 678.9   | 7,876.3   | 249.9   | -     | 249.9    | 8,126.2                 | 2.7   |  |  |
| VIRGINIA     | 51009 | AMHERST        | 8,400.8       | 86.0    | 8,546.9  | 6,743.4   | 637.0   | 7,400.4   | 630.6   | 62.7  | 713.4    | 8,113.8                 | 2.8   |  |  |
| VIRGINIA     | 51011 | APPOMATTOX     | -             | -       | -        | 12,155.0  | 911.7   | 11,066.7  | 406.5   | 60.0  | 466.5    | 22,080.1                | 2.7   |  |  |
| VIRGINIA     | 51013 | ARLINGTON      | -             | -       | -        | 6,369.5   | 217.7   | 6,487.2   | 365.4   | 18.6  | 384.1    | 6,871.3                 | 2.7   |  |  |
| VIRGINIA     | 51015 | AUGUSTA        | 949.9         | 430.6   | 1,380.5  | -         | -       | -         | -       | -     | -        | 1,380.5                 | 4.0   |  |  |
| VIRGINIA     | 51017 | BATH           | 3,490.4       | 93.0    | 3,583.4  | 31,888.8  | 1,690.5 | 31,279.3  | 3,054.4 | 160.7 | 3,215.1  | 40,077.7                | 2.7   |  |  |
| VIRGINIA     | 51019 | BEDFORD        | 3,295.8       | 46.6    | 3,342.2  | 2,412.2   | 539.2   | 2,951.4   | 151.7   | 39.8  | 191.4    | 3,142.8                 | 2.5   |  |  |
| VIRGINIA     | 51023 | BOTETOURT      | 43.5          | -       | 43.5     | 3,921.2   | 258.7   | 4,179.9   | 104.6   | 11.1  | 115.7    | 7,637.8                 | 2.7   |  |  |
| VIRGINIA     | 51029 | BUCKINGHAM     | -             | -       | -        | 9,483.4   | 591.4   | 10,074.7  | 600.3   | -     | 600.3    | 10,718.5                | 2.6   |  |  |
| VIRGINIA     | 51031 | CAMPBELL       | 4,478.8       | 5.5     | 4,484.4  | 9,362.7   | 1,088.4 | 10,451.2  | 423.7   | 48.3  | 472.0    | 10,923.2                | 2.7   |  |  |
| VIRGINIA     | 51033 | CAROLINE       | -             | -       | -        | 6,150.4   | 124.0   | 6,274.4   | 84.4    | 1.8   | 86.2     | 10,445.0                | 2.7   |  |  |
| VIRGINIA     | 51036 | CHARLES CITY   | -             | -       | -        | 15,051.9  | 1,328.6 | 16,390.6  | 451.0   | 13.4  | 464.4    | 16,854.9                | 2.9   |  |  |
| VIRGINIA     | 51037 | CHARLOTTE      | -             | -       | -        | 5,427.3   | 690.1   | 6,117.4   | 112.0   | -     | 112.0    | 6,229.4                 | 2.9   |  |  |
| VIRGINIA     | 51041 | CHESTERFIELD   | 23,624.6      | 308.9   | 23,933.5 | 1.0       | 0.1     | 1.1       | 0.0     | 0.0   | 0.0      | 1.1                     | 2.7   |  |  |
| VIRGINIA     | 51043 | CLARKE         | 313.7         | 0.1     | 313.8    | 25,606.9  | 241.7   | 25,848.6  | 445.7   | -     | 445.7    | 50,227.8                | 2.8   |  |  |
| VIRGINIA     | 51045 | CRAIG          | -             | -       | -        | 7,042.8   | 417.3   | 7,460.1   | 705.7   | 18.0  | 723.7    | 8,497.6                 | 2.8   |  |  |
| VIRGINIA     | 51047 | CULPEPER       | 768.3         | 148.4   | 916.7    | 2,613.9   | 224.2   | 2,838.2   | 135.5   | -     | 135.5    | 2,973.7                 | 2.6   |  |  |
| VIRGINIA     | 51049 | CUMBERLAND     | 35.2          | 21.5    | 56.7     | 15,364.5  | 1,609.6 | 16,974.2  | 819.3   | 70.7  | 890.0    | 18,751.0                | 3.0   |  |  |
| VIRGINIA     | 51053 | DNWIDDIE       | 114.9         | -       | 114.9    | 5,845.6   | 880.9   | 6,726.5   | 515.9   | 75.0  | 590.9    | 7,314.1                 | 2.8   |  |  |
| VIRGINIA     | 51057 | ESSEX          | -             | -       | -        | 2,973.5   | 121.6   | 3,095.1   | 293.5   | 11.0  | 304.5    | 3,424.6                 | 2.8   |  |  |
| VIRGINIA     | 51059 | FAIRFAX        | 43,862.8      | 2,115.6 | 45,978.5 | 6,177.6   | 550.2   | 6,727.7   | 295.8   | 56.3  | 352.1    | 7,079.8                 | 2.8   |  |  |
| VIRGINIA     | 51061 | FAUQUIER       | 404.6         | 5.2     | 409.8    | 14,953.3  | 116.7   | 15,070.0  | 196.0   | -     | 196.0    | 61,244.5                | 3.2   |  |  |
| VIRGINIA     | 51065 | FLUVANNA       | -             | -       | -        | 32,107.3  | 1,174.3 | 33,281.6  | 2,178.0 | 61.1  | 2,239.1  | 35,930.5                | 3.0   |  |  |
| VIRGINIA     | 51069 | FREDERICK      | -             | -       | -        | 8,671.2   | 709.6   | 9,380.9   | 391.4   | 22.4  | 413.9    | 9,794.7                 | 2.8   |  |  |
| VIRGINIA     | 51071 | GILES          | -             | -       | -        | 24,725.8  | 1,532.3 | 26,258.1  | 891.1   | 22.1  | 913.2    | 27,171.3                | 2.8   |  |  |
| VIRGINIA     | 51073 | GLOUCESTER     | -             | -       | -        | 241.8     | 16.4    | 261.2     | 7.4     | -     | 7.4      | 308.6                   | 2.7   |  |  |
| VIRGINIA     | 51075 | GOOCHLAND      | 7,659.7       | 118.7   | 7,778.4  | 18,071.9  | 1,124.5 | 19,196.4  | 350.0   | 43.3  | 393.3    | 27,368.1                | 2.7   |  |  |
| VIRGINIA     | 51079 | GREENE         | -             | -       | -        | 11,011.7  | 866.0   | 11,877.7  | 621.1   | -     | 621.1    | 12,500.8                | 2.7   |  |  |
| VIRGINIA     | 51085 | HANOVER        | 10,584.0      | 122.3   | 10,706.3 | 8,155.9   | 513.0   | 8,668.9   | 346.8   | 20.5  | 367.3    | 9,036.2                 | 2.8   |  |  |
| VIRGINIA     | 51087 | HENRICO        | 8,224.0       | 256.3   | 8,480.3  | 26,440.0  | 1,778.4 | 28,218.4  | 1,147.0 | -     | 1,147.0  | 40,071.7                | 2.8   |  |  |
| VIRGINIA     | 51091 | HIGHLAND       | -             | -       | -        | 14,566.5  | 364.7   | 14,931.2  | 291.1   | -     | 291.1    | 23,696.7                | 2.6   |  |  |
| VIRGINIA     | 51093 | ISLE OF WIGHT  | 549.7         | 4.0     | 553.7    | 1,571.8   | 300.3   | 1,872.6   | 351.8   | 77.3  | 429.1    | 2,304.7                 | 2.5   |  |  |
| VIRGINIA     | 51095 | JAMES CITY     | 1,075.6       | 34.1    | 1,109.7  | 10,832.0  | 339.6   | 11,171.6  | 364.2   | 20.8  | 385.0    | 12,112.3                | 2.7   |  |  |
| VIRGINIA     | 51097 | KING AND QUEEN | -             | -       | -        | 9,115.7   | 250.9   | 9,366.6   | 101.7   | 4.1   | 105.8    | 10,582.1                | 2.8   |  |  |
| VIRGINIA     | 51099 | KING GEORGE    | -             | -       | -        | 5,480.3   | 363.8   | 5,844.1   | 336.1   | 83.4  | 419.5    | 6,263.6                 | 2.7   |  |  |
| VIRGINIA     | 51099 | KING GEORGE    | -             | -       | -        | 9,144.0   | 377.6   | 9,521.7   | 372.2   | 5.2   | 377.4    | 9,904.0                 | 2.1   |  |  |

Table 9

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
 URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
 OTHER NON-SEWERED MEANS OF WASTE DISPOSAL  
 COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
 COUNTY SUMMARIES

NCRI-CHESAPEAKE, Inc.

| STATE         | FIPS  | COUNTY              | b. POPULATION |          |           |             |           |             |           |         |           | TOTAL<br>(septic/other) | c. POPULATION<br>PER<br>HOUSEHOLD<br>(septic/other) |
|---------------|-------|---------------------|---------------|----------|-----------|-------------|-----------|-------------|-----------|---------|-----------|-------------------------|---|
|               |       |                     | Urban         |          |           | Rural       |           |             | Farm      |         |           |                         |   |
|               |       |                     | Septic        | Other    | Subtotal  | Septic      | Other     | Subtotal    | Septic    | Other   | Subtotal  |                         |   |
| VIRGINIA      | 51660 | HARRISONBURG        | 1,093.4       | 19.1     | 1,112.5   | -           | -         | -           | -         | -       | -         | 1,112.5                 | 2.4   |
| VIRGINIA      | 51670 | HOPWELL             | 300.0         | 210.7    | 510.7     | -           | -         | -           | -         | -       | -         | 510.7                   | 2.5   |
| VIRGINIA      | 51678 | LEXINGTON           | 21.8          | -        | 21.8      | -           | -         | -           | -         | -       | -         | 21.8                    | 2.3   |
| VIRGINIA      | 51680 | LYNCHBURG           | 10,890.9      | 192.0    | 11,082.9  | -           | -         | -           | -         | -       | -         | 11,082.9                | 2.7   |
| VIRGINIA      | 51683 | MANASSAS CITY       | 390.8         | 17.3     | 408.1     | -           | -         | -           | -         | -       | -         | 408.1                   | 3.1   |
| VIRGINIA      | 51685 | MANASSAS PARK CITY  | -             | -        | -         | -           | -         | -           | -         | -       | -         | -                       | 0.0   |
| VIRGINIA      | 51700 | NEWPORT NEWS CITY   | 4,943.5       | 373.3    | 5,316.8   | -           | -         | -           | -         | -       | -         | 5,316.8                 | 2.6   |
| VIRGINIA      | 51710 | NORFOLK CITY        | 2,106.3       | 716.5    | 2,822.8   | -           | -         | -           | -         | -       | -         | 2,822.8                 | 3.2   |
| VIRGINIA      | 51730 | PETERSBURG          | 230.6         | 10.6     | 241.2     | -           | -         | -           | -         | -       | -         | 241.2                   | 2.3   |
| VIRGINIA      | 51735 | POQUOSON            | 2,980.8       | 11.0     | 2,991.8   | -           | -         | -           | -         | -       | -         | 2,991.8                 | 2.8   |
| VIRGINIA      | 51740 | PORTSMOUTH CITY     | 793.7         | 522.0    | 1,315.7   | -           | -         | -           | -         | -       | -         | 1,315.7                 | 2.8   |
| VIRGINIA      | 51760 | RICHMOND CITY       | 4,049.2       | 711.8    | 4,761.0   | -           | -         | -           | -         | -       | -         | 4,761.0                 | 2.6   |
| VIRGINIA      | 51790 | STAUNTON            | 662.9         | 91.4     | 754.3     | -           | -         | -           | 41.7      | -       | 41.7      | 839.2                   | 2.4   |
| VIRGINIA      | 51800 | SUFFOLK CITY        | 13,421.2      | 1,016.3  | 14,437.5  | 3,804.3     | 177.2     | 3,981.5     | 213.8     | 19.6    | 233.5     | 18,672.4                | 2.8   |
| VIRGINIA      | 51810 | VIRGINIA BEACH CITY | 11,384.4      | 315.5    | 11,699.9  | -           | -         | -           | -         | -       | -         | 11,699.9                | 2.6   |
| VIRGINIA      | 51820 | WAYNESBORO          | 1,051.7       | 99.5     | 1,151.2   | -           | -         | -           | -         | -       | -         | 1,151.2                 | 2.4   |
| VIRGINIA      | 51830 | WILLIAMSBURG        | 270.5         | 9.6      | 280.1     | -           | -         | -           | -         | -       | -         | 280.1                   | 2.1   |
| VIRGINIA      | 51840 | WINCHESTER          | 765.0         | -        | 765.0     | -           | -         | -           | -         | -       | -         | 765.0                   | 2.8   |
| WEST VIRGINIA | 54003 | BERKELEY            | 752.8         | 41.9     | 814.6     | 30,601.1    | 1,731.1   | 32,332.2    | 796.5     | 74.2    | 870.7     | 34,017.5                | 2.8   |
| WEST VIRGINIA | 54023 | GRANT               | -             | -        | -         | 6,265.4     | 582.3     | 6,847.6     | 430.2     | 37.3    | 467.5     | 7,315.1                 | 2.8   |
| WEST VIRGINIA | 54025 | GREENBRIAR          | 0.3           | -        | 0.3       | -           | 1.5       | 0.3         | -         | 0.0     | -         | 0.0                     | 2.1   |
| WEST VIRGINIA | 54027 | HAMPSHIRE           | -             | -        | -         | 11,510.2    | 1,499.4   | 13,009.5    | 742.2     | 120.7   | 863.0     | 13,872.5                | 2.7   |
| WEST VIRGINIA | 54031 | HARDY               | -             | -        | -         | 6,248.2     | 1,090.0   | 7,338.1     | 569.1     | 125.4   | 694.5     | 8,032.6                 | 2.6   |
| WEST VIRGINIA | 54037 | JEFFERSON           | 198.5         | -        | 198.5     | 20,055.3    | 454.9     | 20,510.2    | 817.0     | 32.7    | 849.7     | 21,558.4                | 2.9   |
| WEST VIRGINIA | 54057 | MINERAL             | 1,653.8       | 16.7     | 1,710.4   | 10,897.3    | 334.2     | 11,231.5    | 413.7     | 8.9     | 422.6     | 13,364.5                | 2.8   |
| WEST VIRGINIA | 54063 | MONROE              | -             | -        | -         | 579.8       | 100.5     | 680.3       | 62.2      | 1.3     | 63.5      | 743.8                   | 2.7   |
| WEST VIRGINIA | 54065 | MORGAN              | -             | -        | -         | 8,631.8     | 387.2     | 9,018.9     | 163.0     | 10.4    | 173.4     | 9,192.4                 | 2.6   |
| WEST VIRGINIA | 54071 | PENDLETON           | -             | -        | -         | 4,818.7     | 1,144.7   | 5,963.3     | 690.0     | 197.1   | 887.1     | 6,850.5                 | 2.7   |
| WEST VIRGINIA | 54075 | POCAHONTAS          | -             | -        | -         | -           | 1.8       | 0.2         | -         | 0.2     | 0.0       | 0.2                     | 2.3   |
| WEST VIRGINIA | 54077 | PRESTON             | -             | -        | -         | -           | 43.3      | 2.7         | -         | 46.0    | 2.7       | 0.1                     | 2.8   |
| WEST VIRGINIA | 54083 | RANDOLPH            | -             | -        | -         | -           | 1.5       | 0.2         | -         | 1.6     | 0.2       | 0.0                     | 1.8   |
| WEST VIRGINIA | 54093 | TUCKER              | -             | -        | -         | -           | 5.2       | 1.9         | -         | 7.1     | 0.1       | 0.1                     | 2.7   |
| Grand Total   |       |                     | 351,782.8     | 37,115.0 | 388,897.8 | 2,199,893.4 | 124,247.4 | 2,324,140.8 | 151,259.0 | 9,182.0 | 160,441.0 | 3,773,489.7             | 2.8   |

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
URBAN, RURAL, AND FARM TYPES USING SEPTIC AND  
OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
MODEL SEGMENT SUMMARIES

CHESAPEAKE BAY PROGRAM  
MODEL SEGMENTS

Housing Units

| Mod Seg | Name              | Sub-basin           | Fall Lin | SEPTIC   |            |          |            |         | SUBTOTAL | OTHER MEANS |       |            |         |            | SUBTOTAL | TOTAL |         |            |
|---------|-------------------|---------------------|----------|----------|------------|----------|------------|---------|----------|-------------|-------|------------|---------|------------|----------|-------|---------|------------|
|         |                   |                     |          | URBAN    | % Subtotal | RURAL    | % Subtotal | FARM    |          | % Subtotal  | URBAN | % Subtotal | RURAL   | % Subtotal |          |       | FARM    | % Subtotal |
| 10      | East Branch 1     | Susquehanna         | Above    | 4,835.9  | 12.4       | 32,500.9 | 83.6       | 1,355.2 | 4.0      | 38,892.0    | 30.2  | 2.2        | 1,185.0 | 87.7       | 135.4    | 10.0  | 1,310.6 | 84,106.8   |
| 20      | East Branch 1     | Susquehanna         | Above    | 6,611.2  | 7.6        | 77,432.9 | 89.0       | 3,431.6 | 3.5      | 87,475.8    | 87.7  | 4.0        | 1,918.5 | 86.6       | 210.1    | 9.5   | 2,216.3 | 184,777.7  |
| 30      | East Branch 2     | Susquehanna         | Above    | 3,304.0  | 9.3        | 30,993.1 | 87.5       | 1,251.1 | 3.2      | 35,422.1    | 173.3 | 12.2       | 1,205.1 | 84.7       | 45.1     | 3.2   | 1,423.5 | 151,336.9  |
| 40      | East Branch 2     | Susquehanna         | Above    | 2,191.2  | 6.0        | 33,482.5 | 91.1       | 1,071.5 | 2.9      | 36,745.1    | 213.3 | 16.0       | 1,104.6 | 82.1       | 16.7     | 1.3   | 1,334.7 | 140,696.8  |
| 50      | West Branch       | Susquehanna         | Above    | 167.9    | 0.9        | 18,509.3 | 97.3       | 140.6   | 1.8      | 19,017.1    | 0.2   | 0.0        | 1,438.8 | 99.1       | 11.4     | 0.8   | 1,430.4 | 36,165.9   |
| 60      | West Branch       | Susquehanna         | Above    | 1,353.1  | 5.2        | 23,330.7 | 91.1       | 987.0   | 3.8      | 26,170.9    | 46.0  | 2.9        | 1,509.0 | 94.1       | 36.8     | 2.3   | 1,591.8 | 83,000.0   |
| 70      | West Branch       | Susquehanna         | Above    | 2,046.2  | 8.8        | 44,946.0 | 90.9       | 2,447.0 | 5.4      | 49,469.1    | 10.5  | 1.7        | 577.7   | 92.1       | 37.7     | 6.0   | 623.8   | 46,129.1   |
| 80      | Lower Susquehanna | Susquehanna         | Above    | 1,876.7  | 3.8        | 44,946.0 | 90.9       | 2,447.0 | 5.4      | 49,469.1    | 146.8 | 6.2        | 2,100.2 | 88.3       | 131.1    | 5.5   | 2,378.0 | 138,452.5  |
| 90      | Junista           | Susquehanna         | Above    | 0.2      | 0.0        | 12,329.9 | 95.8       | 541.5   | 4.2      | 12,871.6    | 0.0   | 0.0        | 427.1   | 96.3       | 15.6     | 3.5   | 42.7    | 17,484.2   |
| 100     | Lower Susquehanna | Susquehanna         | Above    | 2,222.5  | 5.9        | 33,329.2 | 89.3       | 1,782.9 | 4.7      | 37,334.4    | 91.6  | 5.1        | 1,544.5 | 86.7       | 144.6    | 8.1   | 1,780.7 | 95,772.4   |
| 110     | Lower Susquehanna | Susquehanna         | Above    | 9,270.9  | 12.5       | 62,391.8 | 81.8       | 2,800.8 | 3.8      | 74,473.1    | 337.2 | 14.6       | 1,901.7 | 82.4       | 67.6     | 2.9   | 2,306.6 | 251,642.6  |
| 120     | Conowingo         | Susquehanna         | Above    | 136.1    | 1.2        | 9,971.8  | 91.1       | 836.7   | 7.6      | 10,944.7    | 6.4   | 1.8        | 310.8   | 85.6       | 45.9     | 12.6  | 361.1   | 14,865.3   |
| 140     | Conowingo         | Susquehanna         | Above    | 33.4     | 0.3        | 9,330.2  | 94.0       | 554.4   | 5.7      | 9,928.0     | 0.0   | 0.0        | 462.2   | 92.8       | 35.8     | 7.2   | 491.1   | 11,751.0   |
| 160     | Upper Potomac     | Potomac             | Above    | 1,473.7  | 11.7       | 10,707.1 | 84.9       | 414.9   | 3.4      | 12,605.6    | 88.7  | 11.8       | 616.7   | 82.2       | 44.9     | 4.0   | 794.4   | 44,311.5   |
| 170     | Upper Potomac     | Potomac             | Above    | -        | -          | 5,731.9  | 90.7       | 518.9   | 9.3      | 6,340.8     | -     | -          | 951.1   | 84.2       | 178.0    | 15.8  | 1,129.1 | 11,219.2   |
| 175     | Upper Potomac     | Potomac             | Above    | 0.0      | 0.0        | 7,371.6  | 94.9       | 394.3   | 5.1      | 7,765.9     | -     | -          | 178.9   | 90.4       | 93.8     | 9.6   | 972.7   | 10,878.4   |
| 180     | Mid Potomac       | Potomac             | Above    | 3,629.4  | 17.2       | 16,366.4 | 77.7       | 1,062.9 | 5.0      | 21,058.7    | 29.8  | 4.1        | 839.7   | 88.7       | 51.3     | 7.1   | 720.9   | 54,657.6   |
| 190     | Shenandoah        | Potomac             | Above    | 2,614.0  | 9.1        | 24,161.9 | 84.1       | 1,967.7 | 6.8      | 28,743.6    | 121.9 | 7.5        | 1,402.3 | 86.2       | 102.3    | 6.3   | 1,626.5 | 67,236.1   |
| 200     | Shenandoah        | Potomac             | Above    | 636.0    | 2.7        | 31,152.0 | 90.7       | 1,521.7 | 6.5      | 23,309.8    | 18.6  | 1.1        | 1,594.1 | 91.7       | 125.3    | 7.2   | 1,737.9 | 42,817.2   |
| 210     | Lower Potomac     | Potomac             | Above    | 5,918.1  | 21.4       | 20,449.3 | 74.1       | 1,240.4 | 4.5      | 27,610.8    | 152.1 | 16.5       | 763.2   | 83.0       | 3.9      | 0.4   | 919.1   | 61,976.0   |
| 220     | Lower Potomac     | Potomac             | Above    | 12,799.3 | 48.9       | 12,500.4 | 47.8       | 869.9   | 3.3      | 26,169.6    | 295.6 | 45.4       | 337.3   | 51.8       | 18.7     | 2.9   | 651.7   | 220,764.4  |
| 230     | Rappahannock      | Rappahannock        | Above    | 401.4    | 1.8        | 20,085.0 | 92.1       | 1,325.0 | 6.1      | 21,811.5    | 30.6  | 1.9        | 1,450.6 | 92.1       | 93.4     | 5.9   | 1,574.5 | 32,304.1   |
| 235     | Mataponi          | York                | Above    | 278.7    | 5.9        | 4,215.5  | 89.7       | 204.6   | 4.4      | 4,698.8     | 4.8   | 2.2        | 202.6   | 94.8       | 6.4      | 1.0   | 213.8   | 7,304.0    |
| 240     | Mataponi          | York                | Above    | -        | -          | 3,617.5  | 96.8       | 119.7   | 3.2      | 3,737.3     | -     | -          | 355.2   | 97.1       | 10.5     | 2.9   | 365.7   | 4,699.0    |
| 250     | Pamankey          | York                | Above    | 11.5     | 0.3        | 4,825.4  | 94.6       | 201.3   | 5.1      | 4,045.1     | 0.1   | 0.0        | 113.6   | 94.1       | 19.7     | 5.9   | 333.4   | 5,021.2    |
| 260     | Pamankey          | York                | Above    | 45.2     | 0.4        | 3,810.0  | 94.4       | 531.2   | 5.1      | 4,045.1     | 1.9   | 0.2        | 813.5   | 95.9       | 32.8     | 3.9   | 848.3   | 12,094.3   |
| 265     | James             | James               | Above    | -        | -          | 502.2    | 89.4       | 59.4    | 10.6     | 561.6       | -     | -          | 159.0   | 89.8       | 18.0     | 10.2  | 177.0   | 1,011.0    |
| 270     | James             | James               | Above    | 113.5    | 0.7        | 11,879.2 | 93.0       | 1,090.5 | 6.4      | 17,083.2    | 23.2  | 1.3        | 1,714.0 | 93.6       | 93.4     | 5.1   | 1,830.6 | 31,741.5   |
| 280     | James             | James               | Above    | 11,673.4 | 25.2       | 31,226.2 | 71.7       | 1,472.9 | 3.2      | 46,372.5    | 122.7 | 4.4        | 2,476.6 | 89.4       | 171.0    | 4.2   | 2,770.4 | 100,846.6  |
| 290     | James             | James               | Above    | 1,142.2  | 12.5       | 7,658.4  | 83.7       | 350.5   | 3.8      | 9,151.0     | 11.7  | 2.8        | 309.2   | 95.4       | 7.6      | 1.8   | 418.4   | 35,674.4   |
| 300     | Appomattox        | Appomattox          | Above    | 142.0    | 1.3        | 10,217.3 | 92.3       | 724.2   | 6.5      | 11,083.5    | 9.9   | 1.2        | 761.8   | 92.0       | 56.6     | 6.8   | 828.3   | 15,328.7   |
| 310     | Appomattox        | Appomattox          | Above    | 7.8      | 0.4        | 1,641.6  | 94.1       | 94.8    | 5.4      | 1,744.2     | -     | -          | 68.6    | 94.2       | 4.2      | 5.8   | 72.8    | 2,137.5    |
| 330     | Patuxent          | Patuxent            | Above    | 1,265.1  | 20.0       | 4,864.5  | 77.1       | 183.0   | 2.9      | 6,312.6     | 10.6  | 13.4       | 68.5    | 86.6       | -        | -     | 79.1    | 11,472.9   |
| 340     | Patuxent          | Patuxent            | Above    | 2,568.7  | 38.4       | 3,967.5  | 59.3       | 155.4   | 2.3      | 6,691.5     | 99.2  | 54.9       | 11.4    | 45.1       | -        | -     | 180.6   | 88,575.1   |
| 370     | Bohemia           | Upper Eastern Shore | Below    | 0.4      | 0.0        | 993.2    | 94.0       | 62.7    | 5.9      | 1,056.3     | -     | -          | 18.1    | 97.2       | 0.5      | 2.1   | 18.6    | 1,339.3    |
| 380     | Chester           | Upper Eastern Shore | Below    | 111.0    | 1.8        | 5,624.4  | 89.1       | 577.4   | 9.1      | 6,312.8     | 6.0   | 2.1        | 263.7   | 93.0       | 13.9     | 4.9   | 283.6   | 10,012.4   |
| 390     | Wye               | Upper Eastern Shore | Below    | -        | -          | 1,430.4  | 92.1       | 122.0   | 7.9      | 1,552.4     | -     | -          | 55.2    | 97.8       | 1.2      | 2.2   | 56.4    | 2,224.0    |
| 400     | Lower Choptank    | Upper Eastern Shore | Below    | 146.2    | 1.8        | 7,008.8  | 88.5       | 768.2   | 9.7      | 7,923.2     | 10.5  | 3.0        | 321.0   | 91.6       | 19.0     | 5.4   | 380.5   | 15,810.5   |
| 410     | Lower Nanticoke   | Lower Eastern Shore | Below    | 415.8    | 2.6        | 14,652.7 | 91.2       | 1,005.2 | 6.3      | 16,073.6    | 27.3  | 4.3        | 545.7   | 86.7       | 56.6     | 9.0   | 630.6   | 23,910.7   |

Table 10

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
 URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
 OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
 MODEL SEGMENT SUMMARIES

CHESAPEAKE BAY PROGRAM  
 MODEL SEGMENTS

| Mod Seg Name          | Sub-basin               | Fell Lth | SEPTIC   |            |          |            |         |            | OTHER MEANS |            |       |            |      |            | SUBTOTAL | TOTAL   |           |
|-----------------------|-------------------------|----------|----------|------------|----------|------------|---------|------------|-------------|------------|-------|------------|------|------------|----------|---------|-----------|
|                       |                         |          | URBAN    | % Subtotal | RURAL    | % Subtotal | FARM    | % Subtotal | URBAN       | % Subtotal | RURAL | % Subtotal | FARM | % Subtotal |          |         |           |
| 420 Wicomico          | Lower Eastern Shore     | Below    | 1622     | 1.6        | 9,819.9  | 95.8       | 268.5   | 2.6        | 10,150.7    | 16.0       | 7.3   | 189.6      | 86.8 | 128        | 5.9      | 218.4   | 22,915.1  |
| 430 Pocomoke          | Lower Eastern Shore     | Below    | 38.4     | 0.4        | 8,335.4  | 91.3       | 771.7   | 8.2        | 9,165.5     | 2.5        | 0.6   | 373.5      | 88.4 | 468        | 11.0     | 424.8   | 16,404.1  |
| 440 Coast 4           | Lower Eastern Shore     | Below    | -        | -          | 6,294.3  | 96.4       | 237.4   | 3.6        | 6,531.7     | -          | -     | 700.5      | 93.5 | 48.8       | 6.5      | 749.3   | 8,690.1   |
| 450 Coast 11          | West Chesapeake         | Below    | 4,840.1  | 13.0       | 30,900.8 | 82.9       | 1,539.6 | 4.1        | 37,180.5    | 55.7       | 10.5  | 782.2      | 85.8 | 339        | 3.7      | 911.9   | 71,325.1  |
| 470 Dumpowder         | West Chesapeake         | Below    | 8,301.5  | 30.7       | 17,992.7 | 66.6       | 710.2   | 2.6        | 27,010.4    | 151.9      | 31.6  | 327.4      | 68.1 | 1.6        | 0.3      | 480.9   | 88,120.1  |
| 480 Baltimore         | West Chesapeake         | Below    | 3,117.4  | 60.0       | 2,050.8  | 39.4       | 30.2    | 0.6        | 5,198.4     | 1,972.2    | 98.6  | 27.1       | 1.4  | -          | -        | 1,944.3 | 26,844.1  |
| 490 Lower Patuxent    | West Chesapeake         | Below    | 7,646.9  | 82.6       | 1,577.9  | 17.1       | 28.9    | 0.3        | 9,153.6     | 422.9      | 92.5  | 34.4       | 7.5  | -          | -        | 457.3   | 110,324.1 |
| 500 Patuxent          | Patuxent/Mid Chesapeake | Below    | 5,297.5  | 23.3       | 16,731.4 | 73.7       | 674.8   | 3.0        | 22,703.6    | 147.3      | 19.1  | 578.9      | 74.9 | 46.6       | 6.0      | 772.9   | 64,788.1  |
| 510 Severn            | Patuxent/Mid Chesapeake | Below    | 3,992.7  | 56.0       | 3,126.6  | 43.8       | 11.6    | 0.2        | 7,130.9     | 73.4       | 63.5  | 41.8       | 36.2 | 0.3        | 0.2      | 115.5   | 15,243.1  |
| 540 Anacostia         | Potomac                 | Below    | 2,481.3  | 83.2       | 487.4    | 16.4       | 12.4    | 0.4        | 2,981.2     | 74.9       | 99.9  | 0.8        | 0.1  | -          | -        | 775.8   | 142,276.1 |
| 550 Occoquan          | Potomac                 | Below    | 2,969.5  | 14.1       | 17,630.9 | 83.7       | 469.1   | 2.2        | 21,069.4    | 133.8      | 24.5  | 400.9      | 73.5 | 10.9       | 2.0      | 545.6   | 112,356.1 |
| 560 Rappahannock      | Rappahannock            | Below    | 991.2    | 7.0        | 12,661.6 | 89.0       | 579.4   | 4.1        | 14,132.3    | 16.2       | 1.5   | 982.0      | 90.7 | 84.1       | 7.8      | 1,082.2 | 35,696.1  |
| 580 Great Wicomico    | Rappahannock            | Below    | -        | -          | 1,073.4  | 97.1       | 32.6    | 2.9        | 1,106.0     | -          | -     | 88.0       | 94.7 | 4.9        | 5.3      | 92.9    | 1,335.5   |
| 590 York              | Rappahannock            | Below    | 4,885.8  | 26.4       | 13,114.0 | 70.9       | 492.6   | 2.7        | 18,492.5    | 17.5       | 11.2  | 654.6      | 84.1 | 36.4       | 4.7      | 778.5   | 27,929.8  |
| 600 James             | James                   | Below    | 13,900.7 | 40.1       | 20,236.7 | 58.4       | 520.3   | 1.5        | 34,677.6    | 72.9       | 49.7  | 719.1      | 49.5 | 11.1       | 0.8      | 1,453.1 | 286,537.4 |
| 610 Chickahominy      | James                   | Below    | 4,603.5  | 43.6       | 5,831.6  | 55.4       | 109.5   | 1.0        | 10,444.7    | 115.0      | 35.9  | 205.6      | 64.1 | -          | -        | 320.7   | 67,943.8  |
| 620 Nansemond         | James                   | Below    | 4,304.4  | 64.5       | 2,247.3  | 33.7       | 126.1   | 1.9        | 6,477.8     | 363.1      | 74.5  | 89.6       | 22.0 | 14.2       | 3.5      | 406.9   | 20,787.4  |
| 630 Elizabeth         | James                   | Below    | 794.0    | 99.6       | 2.9      | 0.4        | 0.5     | 0.1        | 797.4       | 14.9       | 99.4  | 0.1        | 0.5  | 0.0        | 0.2      | 14.9    | 17,707.2  |
| 700 East Branch 1     | Susquahanna             | Above    | 1.1      | 0.0        | 2,746.5  | 91.8       | 243.4   | 8.1        | 2,991.0     | -          | -     | 125.6      | 93.5 | 8.7        | 6.5      | 134.3   | 4,926.0   |
| 710 Lower Susquahanna | Susquahanna             | Above    | 1,319.8  | 10.4       | 10,678.3 | 84.5       | 641.3   | 5.1        | 12,439.4    | 44.4       | 11.7  | 310.8      | 81.7 | 25.1       | 6.6      | 380.3   | 35,360.7  |
| 720 Conowingo         | Susquahanna             | Above    | 2,085.3  | 8.9        | 19,614.7 | 84.1       | 1,616.9 | 6.9        | 23,317.0    | 236.2      | 22.7  | 630.1      | 62.4 | 155.7      | 14.9     | 1,042.0 | 105,648.6 |
| 730 Mid Potomac       | Potomac                 | Above    | 181.0    | 1.6        | 10,153.7 | 91.5       | 761.9   | 6.9        | 11,096.5    | 0.0        | 0.0   | 455.5      | 93.0 | 34.5       | 7.0      | 490.0   | 30,007.9  |
| 740 Mid Potomac       | Potomac                 | Above    | 1,153.8  | 3.5        | 30,866.9 | 93.1       | 1,135.5 | 3.4        | 33,136.1    | 36.5       | 2.1   | 1,601.9    | 92.9 | 86.7       | 5.0      | 1,725.2 | 67,318.3  |
| 750 Lower Potomac     | Potomac                 | Above    | 195      | 0.4        | 4,235.5  | 93.5       | 274.9   | 6.1        | 4,429.9     | 0.1        | 0.1   | 166.9      | 94.4 | 9.9        | 5.6      | 176.9   | 10,672.5  |
| 760 Upper Patuxent    | West Chesapeake         | Below    | 2,600.8  | 13.2       | 16,662.9 | 84.5       | 458.6   | 2.3        | 19,722.3    | 34.9       | 8.3   | 387.3      | 91.7 | -          | -        | 422.2   | 35,941.7  |
| 770 Upper Choptank    | Upper Eastern Shore     | Below    | 3.9      | 0.1        | 3,001.9  | 95.2       | 146.7   | 4.7        | 3,152.5     | 0.2        | 0.2   | 79.3       | 93.8 | 5.0        | 5.9      | 84.5    | 3,402.1   |
| 780 Upper Nanticoke   | Lower Eastern Shore     | Below    | 1.1      | 0.1        | 1,235.6  | 90.7       | 126.1   | 9.2        | 1,362.8     | 0.1        | 0.4   | 23.0       | 86.1 | 3.6        | 13.5     | 26.8    | 1,585.7   |
| 800 Coast 1a          | Upper Eastern Shore     | Below    | 275.2    | 8.1        | 3,053.9  | 89.7       | 76.7    | 2.3        | 3,105.8     | 9.5        | 9.5   | 88.8       | 89.6 | 0.9        | 0.9      | 99.1    | 5,038.4   |
| 810 Coast 1b          | Upper Eastern Shore     | Below    | -        | -          | 2,026.8  | 91.6       | 185.2   | 8.4        | 2,212.0     | -          | -     | 118.9      | 97.2 | 3.4        | 2.8      | 122.3   | 3,359.6   |
| 820 Coast 1c          | Upper Eastern Shore     | Below    | -        | -          | 3,293.6  | 98.7       | 44.3    | 1.3        | 3,338.0     | -          | -     | 75.2       | 99.7 | 0.2        | 0.3      | 75.4    | 5,089.6   |
| 830 Coast 1d          | Upper Eastern Shore     | Below    | 126.8    | 3.2        | 3,579.2  | 91.1       | 223.3   | 5.7        | 3,829.3     | 12.5       | 14.3  | 73.4       | 84.2 | 1.3        | 1.5      | 87.2    | 9,415.3   |
| 840 Coast 1e          | Upper Eastern Shore     | Below    | 12.4     | 0.4        | 2,649.5  | 95.3       | 119.0   | 4.3        | 2,781.0     | 0.0        | 0.0   | 287.8      | 96.5 | 10.5       | 3.5      | 298.3   | 4,263.3   |
| 850 Coast 6a          | West Chesapeake         | Below    | 394.4    | 41.9       | 547.9    | 58.1       | -       | -          | 942.3       | 11.8       | 20.6  | 45.7       | 79.4 | -          | -        | 57.5    | 1,430.7   |
| 860 Coast 6b          | West Chesapeake         | Below    | 1,767.9  | 81.9       | 389.7    | 18.1       | -       | -          | 2,157.6     | 975.6      | 98.9  | 10.4       | 1.1  | -          | -        | 986.0   | 191,634.3 |
| 870 Coast 6c          | West Chesapeake         | Below    | 7,442.9  | 89.2       | 899.8    | 10.8       | -       | -          | 8,342.6     | 41.6       | 82.9  | 8.6        | 17.1 | -          | -        | 50.2    | 20,567.1  |
| 880 Coast 5           | Patuxent/Mid Chesapeake | Below    | 5,500.0  | 42.3       | 7,264.5  | 55.8       | 248.8   | 1.9        | 13,013.4    | 214.4      | 48.5  | 211.2      | 47.7 | 16.8       | 3.8      | 424.4   | 60,325.2  |
| 890 Potomac 1         | Potomac                 | Below    | 731.2    | 50.7       | 708.8    | 49.1       | 3.4     | 0.2        | 1,443.5     | 676.5      | 100.0 | 0.1        | 0.0  | 0.0        | 0.0      | 676.7   | 213,611.2 |
| 900 Potomac 2         | Potomac                 | Below    | 3,645.3  | 83.0       | 738.8    | 16.8       | 7.7     | 0.2        | 4,391.8     | 568.6      | 97.7  | 13.6       | 2.3  | -          | -        | 582.2   | 335,846.9 |
| 910 Potomac 3         | Potomac                 | Below    | 3,503.4  | 49.4       | 3,537.0  | 49.8       | 58.2    | 0.8        | 7,098.5     | 565.6      | 75.2  | 184.1      | 24.5 | 2.1        | 0.3      | 751.8   | 121,614.4 |

Table 10

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
 URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
 OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
 MODEL SEGMENT SUMMARIES

| CHESAPEAKE BAY PROGRAM<br>MODEL SEGMENTS |                         |          |           |            |             |            |          |            |             |            |       |            |      |            |          |          |             |
|--|-------------------------|----------|-----------|------------|-------------|------------|----------|------------|-------------|------------|-------|------------|------|------------|----------|----------|-------------|
| Mod Seg Name                             | Sub-basin               | Fall/Lin | SEPTIC    |            |             |            |          |            | OTHER MEANS |            |       |            |      |            | SUBTOTAL | TOTAL    |             |
|  |                         |          | URBAN     | % Subtotal | RURAL       | % Subtotal | FARM     | % Subtotal | URBAN       | % Subtotal | RURAL | % Subtotal | FARM | % Subtotal |          |          |             |
| 920 Potomac 4                            | Potomac                 | Below    | 1,503.5   | 8.0        | 16,619.2    | 88.0       | 260.5    | 4.0        | 18,882.2    | 56.1       | 4.2   | 1,107.0    | 83.4 | 164.6      | 12.4     | 1,327.7  | 37,118.2    |
| 930 Coast 8a                             | Rappahannock            | Below    | -         | -          | 1,279.6     | 96.0       | 53.6     | 4.0        | 1,333.1     | -          | -     | 89.5       | 93.0 | 6.7        | 7.0      | 94.2     | 1,713.4     |
| 940 Coast 8b                             | Rappahannock            | Below    | 175.2     | 1.9        | 9,006.8     | 95.7       | 224.9    | 2.4        | 9,406.9     | 2.7        | 0.5   | 518.0      | 95.4 | 22.1       | 4.1      | 542.9    | 10,714.0    |
| 950 Coast 8c                             | Rappahannock            | Below    | 3,817.8   | 71.8       | 1,492.3     | 28.1       | 4.9      | 0.1        | 5,315.0     | 110.0      | 81.1  | 25.0       | 18.4 | 0.6        | 0.5      | 131.7    | 58,486.2    |
| 960 Coast 9                              | James                   | Below    | 7,748.5   | 99.7       | 20.4        | 0.3        | 2.5      | 0.0        | 7,771.5     | 526.5      | 99.9  | 0.3        | 0.1  | 0.4        | 0.1      | 527.2    | 240,078.7   |
| 970 Potomac 5                            | Potomac                 | Below    | 244.2     | 21.3       | 887.4       | 77.4       | 15.3     | 1.4        | 1,147.1     | 7.3        | 21.1  | 27.0       | 78.5 | 0.1        | 0.4      | 34.4     | 10,497.9    |
| 980 Potomac 6                            | Potomac                 | Below    | 240.2     | 1.9        | 12,270.3    | 95.3       | 361.9    | 2.8        | 12,872.3    | 15.7       | 2.2   | 659.3      | 92.1 | 40.7       | 5.7      | 715.7    | 24,049.9    |
| 990 Coast 12                             | Patuxent/Mid Chesapeake | Below    | 41.5      | 6.1        | 618.5       | 91.1       | 18.7     | 2.8        | 678.7       | -          | -     | 35.4       | 88.4 | 4.7        | 11.6     | 40.0     | 1,537.4     |
| CHESAPEAKE BAY                           |                         |          | 894.6     | 31.0       | 1,933.7     | 67.0       | 57.4     | 2.0        | 2,885.7     | 25.2       | 23.5  | 79.1       | 73.8 | 3.0        | 2.8      | 107.3    | 10,210.2    |
| JAMES RIVER                              |                         |          | 205.7     | 60.7       | 131.6       | 38.8       | 1.6      | 0.5        | 339.6       | 7.0        | 52.5  | 6.3        | 47.2 | 0.0        | 0.3      | 15.4     | 3,119.3     |
| PATUXENT RIVER                           |                         |          | 54.1      | 31.3       | 114.9       | 66.5       | 3.9      | 2.2        | 172.1       | 1.1        | 17.1  | 4.9        | 77.9 | 0.3        | 5.0      | 6.3      | 194.9       |
| POTOMAC RIVER                            |                         |          | 33.2      | 7.4        | 402.4       | 89.6       | 13.7     | 3.0        | 449.3       | 15.9       | 41.1  | 20.8       | 53.8 | 2.0        | 5.2      | 34.7     | 2,515.9     |
| RAPPAHANNOCK                             |                         |          | 12.5      | 5.7        | 201.0       | 91.9       | 5.3      | 2.4        | 218.8       | 0.5        | 3.7   | 13.4       | 91.9 | 0.6        | 4.4      | 146      | 40.1        |
| YORK RIVER                               |                         |          | 257.0     | 71.6       | 100.0       | 27.9       | 1.8      | 0.5        | 358.9       | 4.1        | 35.7  | 7.2        | 62.7 | 0.2        | 1.7      | 71.4     | 425.0       |
| Grand Total                              |                         |          | 193,773.2 | 15.3       | 1,020,716.5 | 80.7       | 50,001.7 | 4.0        | 1,264,491.4 | 11,404.4   | 18.6  | 46,647.3   | 76.3 | 3,119.9    | 5.1      | 61,171.6 | 5,291,265.8 |

Table 10

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
 URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
 OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
 MODEL SEGMENT SUMMARIES

| CHESAPEAKE BAY PROGRAM<br>MODEL SEGMENTS: POPULATION |                   |                     |           | 2. Population             |         |           |         |        |         |                              |            |            |      |    |
|--|-------------------|---------------------|-----------|---------------------------|---------|-----------|---------|--------|---------|------------------------------|------------|------------|------|----|
|  |                   |                     |           | a. POPULATION USING SEWER |         |           |         |        |         | TOTAL POPULATION USING SEWER |            |            |      |    |
| AS:  |                   |                     |           | URBAN                     |         | RURAL     |         | FARM   |         | MIN                          |            |            | MEAN | M. |
| Mod Seg  | Name              | Sub-basin           | Fall Line |                           | % Total |           | % Total |        | % Total |                              |            |            |      |    |
| 10   | East Branch 1     | Susquehanna         | Above     | 88,575.23                 | 83.52   | 17,465.86 | 16.47   | 12.36  | 0.01    | 96,943.18                    | 106,653.43 | 116,180.   |      |    |
| 20   | East Branch 1     | Susquehanna         | Above     | 191,568.27                | 84.83   | 34,208.93 | 15.15   | 43.47  | 0.02    | 204,290.65                   | 225,820.78 | 250,038.   |      |    |
| 30   | East Branch 2     | Susquehanna         | Above     | 259,834.78                | 92.48   | 21,090.78 | 7.51    | 29.83  | 0.01    | 270,169.96                   | 280,953.38 | 292,173.1  |      |    |
| 40   | East Branch 2     | Susquehanna         | Above     | 192,474.06                | 80.00   | 48,006.59 | 19.95   | 119.90 | 0.05    | 227,499.16                   | 240,600.24 | 254,082.5  |      |    |
| 50   | West Branch       | Susquehanna         | Above     | 14,454.63                 | 36.36   | 25,271.42 | 63.57   | 25.01  | 0.06    | 35,161.52                    | 39,751.05  | 44,456.4   |      |    |
| 60   | West Branch       | Susquehanna         | Above     | 101,455.26                | 75.15   | 33,427.31 | 24.76   | 116.58 | 0.09    | 126,337.85                   | 134,999.12 | 143,929.   |      |    |
| 70   | West Branch       | Susquehanna         | Above     | 36,854.05                 | 69.01   | 16,493.53 | 30.88   | 58.64  | 0.11    | 48,623.38                    | 53,406.20  | 58,401.    |      |    |
| 80   | Lower Susquehanna | Susquehanna         | Above     | 153,632.03                | 74.59   | 52,058.86 | 25.27   | 287.06 | 0.14    | 191,403.19                   | 205,978.02 | 221,016.   |      |    |
| 90   | Junita            | Susquehanna         | Above     | 3,092.30                  | 32.76   | 6,326.13  | 67.02   | 20.96  | 0.22    | 7,649.79                     | 9,439.38   | 11,354.1   |      |    |
| 100  | Junita            | Susquehanna         | Above     | 94,836.28                 | 69.34   | 41,784.49 | 30.55   | 140.52 | 0.10    | 124,540.23                   | 136,761.15 | 149,465.1  |      |    |
| 110  | Lower Susquehanna | Susquehanna         | Above     | 340,006.48                | 80.62   | 81,483.68 | 19.32   | 207.56 | 0.03    | 390,512.74                   | 421,792.12 | 453,920.2  |      |    |
| 120  | Conowingo         | Susquehanna         | Above     | 4,108.96                  | 46.06   | 4,745.30  | 53.19   | 66.68  | 0.75    | 6,500.60                     | 8,910.93   | 11,549.4   |      |    |
| 140  | Conowingo         | Susquehanna         | Above     | 1,876.34                  | 58.62   | 1,319.03  | 41.21   | 5.31   | 0.17    | 2,432.98                     | 3,200.68   | 4,176.2    |      |    |
| 160  | Upper Potomac     | Potomac             | Above     | 53,596.69                 | 72.39   | 20,421.47 | 27.58   | 18.55  | 0.03    | 66,784.27                    | 74,016.74  | 81,594.7   |      |    |
| 170  | Upper Potomac     | Potomac             | Above     | -                         | -       | 8,426.84  | 99.47   | 45.27  | 0.53    | 6,753.91                     | 8,472.10   | 10,464.3   |      |    |
| 175  | Upper Potomac     | Potomac             | Above     | 0.03                      | 0.00    | 4,920.04  | 99.74   | 12.98  | 0.26    | 3,683.39                     | 4,913.06   | 6,421.4    |      |    |
| 180  | Mid Potomac       | Potomac             | Above     | 59,012.05                 | 74.33   | 20,335.21 | 25.61   | 42.97  | 0.05    | 72,046.16                    | 79,390.26  | 87,190.0   |      |    |
| 190  | Shenandoah        | Potomac             | Above     | 72,926.36                 | 82.15   | 15,733.73 | 17.72   | 115.87 | 0.13    | 78,284.30                    | 88,715.98  | 99,808.51  |      |    |
| 200  | Shenandoah        | Potomac             | Above     | 25,195.12                 | 58.43   | 17,847.20 | 41.39   | 77.06  | 0.18    | 35,383.90                    | 43,119.35  | 51,526.4   |      |    |
| 210  | Lower Potomac     | Potomac             | Above     | 74,818.22                 | 88.52   | 9,695.65  | 11.47   | 3.33   | 0.00    | 76,310.79                    | 84,517.28  | 93,237.61  |      |    |
| 220  | Lower Potomac     | Potomac             | Above     | 513,269.11                | 98.00   | 10,839.01 | 1.99    | 34.52  | 0.01    | 507,097.74                   | 523,742.55 | 540,867.41 |      |    |
| 230  | Rappahannock      | Rappahannock        | Above     | 10,993.65                 | 48.12   | 11,832.88 | 51.79   | 20.56  | 0.09    | 18,591.48                    | 22,847.08  | 27,363.94  |      |    |
| 235  | Mattaponi         | York                | Above     | 5,317.37                  | 74.50   | 1,819.92  | 25.50   | -      | -       | 5,854.38                     | 7,137.29   | 8,511.98   |      |    |
| 240  | Mattaponi         | York                | Above     | -                         | -       | 1,593.75  | 100.00  | 0.05   | 0.00    | 747.06                       | 1,593.80   | 2,545.04   |      |    |
| 250  | Pamunkey          | York                | Above     | 298.04                    | 18.31   | 1,325.84  | 81.46   | 3.68   | 0.23    | 949.19                       | 1,677.56   | 2,359.6    |      |    |
| 260  | Pamunkey          | York                | Above     | 235.15                    | 10.44   | 2,010.00  | 89.28   | 6.30   | 0.28    | 1,066.32                     | 2,231.45   | 3,656.71   |      |    |
| 265  | James             | James               | Above     | -                         | -       | 649.01    | 99.65   | 2.27   | 0.35    | 400.99                       | 651.28     | 938.11     |      |    |
| 270  | James             | James               | Above     | 18,322.82                 | 59.55   | 12,424.93 | 40.38   | 18.77  | 0.06    | 25,875.00                    | 30,765.51  | 36,075.41  |      |    |
| 280  | James             | James               | Above     | 109,974.61                | 91.12   | 10,689.88 | 8.86    | 30.14  | 0.02    | 107,182.30                   | 120,691.66 | 135,328.64 |      |    |
| 290  | James             | James               | Above     | 62,979.67                 | 97.79   | 1,415.29  | 2.20    | 5.08   | 0.01    | 61,615.66                    | 64,401.04  | 67,413.01  |      |    |
| 300  | Appomattox        | Appomattox          | Above     | 4,452.59                  | 54.82   | 3,643.25  | 44.86   | 26.40  | 0.32    | 6,007.21                     | 8,122.24   | 10,530.30  |      |    |
| 310  | Appomattox        | Appomattox          | Above     | 641.60                    | 73.60   | 229.31    | 26.30   | 0.84   | 0.10    | 655.98                       | 871.74     | 1,112.18   |      |    |
| 330  | Patuxent          | Patuxent            | Above     | 15,094.40                 | 98.99   | 151.98    | 1.00    | 2.29   | 0.02    | 14,349.92                    | 15,245.11  | 14,277.95  |      |    |
| 340  | Patuxent          | Patuxent            | Above     | 280,678.45                | 99.40   | 1,316.06  | 0.59    | 13.12  | 0.01    | 281,566.13                   | 282,011.13 | 282,567.87 |      |    |
| 370  | Bohemia           | Upper Eastern Shore | Below     | 209.77                    | 29.99   | 485.05    | 69.35   | 4.64   | 0.66    | 472.37                       | 699.47     | 926.56     |      |    |
| 380  | Chester           | Upper Eastern Shore | Below     | 2,523.20                  | 30.70   | 5,695.95  | 58.20   | 90.44  | 1.10    | 6,321.59                     | 8,219.58   | 10,175.32  |      |    |
| 390  | Wye               | Upper Eastern Shore | Below     | -                         | -       | 1,626.13  | 99.51   | 7.99   | 0.49    | 1,213.59                     | 1,634.13   | 2,096.05   |      |    |

Table 10

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
MODEL SEGMENT SUMMARIES

| CHESAPEAKE BAY PROGRAM<br>MODEL SEGMENTS: POPULATION |                   |                         |           | 2. Population             |         |           |         |                              |         |            |            |            |
|--|-------------------|-------------------------|-----------|---------------------------|---------|-----------|---------|------------------------------|---------|------------|------------|------------|
| Mod Seg  | Name              | Sub-basin               | Fall Line | a. POPULATION USING SEWER |         |           |         | TOTAL POPULATION USING SEWER |         |            |            |            |
|  |                   |                         |           | AS:                       |         | AS:       |         | AS:                          |         |            | MIN        | MEAN       |
|  |                   |                         |           | URBAN                     | % Total | RURAL     | % Total | FARM                         | % Total |            |            |            |
| 400  | Lower Choptank    | Upper Eastern Shore     | Below     | 11,247.18                 | 62.54   | 6,671.28  | 37.89   | 6630                         | 0.37    | 15,717.07  | 17,984.76  | 20,399.35  |
| 410  | Lower Nanticoke   | Lower Eastern Shore     | Below     | 9,094.14                  | 45.08   | 9,786.55  | 54.50   | 7605                         | 0.42    | 14,101.71  | 17,956.74  | 21,752.10  |
| 420  | Wicomico          | Lower Eastern Shore     | Below     | 21,983.83                 | 72.89   | 7,917.78  | 26.25   | 683                          | 0.02    | 26,547.07  | 30,161.42  | 33,854.92  |
| 430  | Pocomoke          | Lower Eastern Shore     | Below     | 6,669.49                  | 41.71   | 9,251.21  | 57.16   | 6865                         | 0.43    | 13,171.44  | 15,989.36  | 18,531.97  |
| 440  | Coast 4           | Lower Eastern Shore     | Below     | -                         | -       | 3,161.39  | 99.19   | 2583                         | 0.81    | 2,142.94   | 3,187.22   | 4,174.93   |
| 450  | Coast 11          | West Chesapeake         | Below     | 68,796.87                 | 78.20   | 19,101.60 | 21.71   | 7978                         | 0.09    | 78,158.57  | 87,978.33  | 98,134.66  |
| 470  | Gunpowder         | West Chesapeake         | Below     | 146,751.16                | 97.10   | 4,386.41  | 2.50    | 032                          | 0.00    | 143,113.71 | 151,137.69 | 159,217.73 |
| 480  | Baltimore         | West Chesapeake         | Below     | 550,991.40                | 99.98   | 106.14    | 0.02    | -                            | -       | 534,908.90 | 551,038.20 | 567,252.10 |
| 490  | Lower Patuxent    | West Chesapeake         | Below     | 262,859.84                | 99.75   | 654.41    | 0.25    | 12.55                        | 0.00    | 253,173.84 | 263,536.81 | 273,741.68 |
| 500  | Patuxent          | Patuxent/Mid Chesapeake | Below     | 112,177.29                | 95.06   | 5,748.71  | 4.87    | 1.78                         | 0.00    | 112,165.23 | 118,024.52 | 124,067.08 |
| 510  | Severn            | Patuxent/Mid Chesapeake | Below     | 23,861.45                 | 99.82   | 90.97     | 0.38    | 0.51                         | 0.00    | 21,454.21  | 23,952.95  | 26,644.12  |
| 540  | Anacostia         | Potomac                 | Below     | 625,596.40                | 99.77   | 1,429.76  | 0.23    | 0.13                         | 0.00    | 615,571.20 | 627,032.60 | 638,093.20 |
| 550  | Oceochquan        | Potomac                 | Below     | 256,827.90                | 95.76   | 11,350.17 | 4.21    | 8.52                         | 0.00    | 258,780.37 | 268,186.46 | 277,963.64 |
| 560  | Rappahannock      | Rappahannock            | Below     | 45,016.11                 | 14.92   | 7,958.40  | 15.01   | 40.52                        | 0.01    | 47,929.39  | 53,034.86  | 58,524.46  |
| 580  | Great Wicomico    | Rappahannock            | Below     | -                         | -       | 271.75    | 99.62   | 1.03                         | 0.38    | 15.74      | 272.79     | 528.07     |
| 590  | York              | Rappahannock            | Below     | 18,020.27                 | 14.06   | 3,414.27  | 15.91   | 2.51                         | 0.01    | 17,973.55  | 21,437.06  | 25,254.15  |
| 600  | James             | James                   | Below     | 613,038.62                | 96.86   | 19,791.56 | 3.13    | 72.74                        | 0.01    | 603,512.24 | 632,902.83 | 662,694.36 |
| 610  | Chickahominy      | James                   | Below     | 129,396.25                | 97.73   | 2,992.61  | 2.26    | 7.66                         | 0.01    | 124,216.39 | 132,396.50 | 140,736.98 |
| 620  | Nansemond         | James                   | Below     | 37,162.52                 | 98.37   | 425.92    | 1.13    | -                            | -       | 34,711.31  | 37,588.43  | 40,471.67  |
| 630  | Elizabeth         | James                   | Below     | 44,411.83                 | 100.00  | 0.03      | 0.00    | -                            | -       | 43,025.07  | 44,418.87  | 45,813.94  |
| 700  | East Branch I     | Susquehanna             | Above     | 2,241.81                  | 52.70   | 2,006.54  | 47.15   | 6.43                         | 0.15    | 3,922.22   | 4,255.78   | 4,622.30   |
| 710  | Lower Susquehanna | Susquehanna             | Above     | 48,841.19                 | 86.79   | 7,356.27  | 13.07   | 80.71                        | 0.14    | 50,549.72  | 56,281.33  | 62,159.09  |
| 720  | Conowingo         | Susquehanna             | Above     | 178,934.34                | 87.70   | 24,477.63 | 12.00   | 602.71                       | 0.30    | 189,635.87 | 204,036.17 | 218,834.21 |
| 730  | Mid Potomac       | Potomac                 | Above     | 22,514.76                 | 50.99   | 21,618.52 | 48.96   | 22.91                        | 0.05    | 39,305.38  | 44,156.16  | 49,178.31  |
| 740  | Mid Potomac       | Potomac                 | Above     | 47,912.16                 | 60.99   | 30,557.81 | 38.90   | 82.81                        | 0.11    | 69,152.64  | 78,552.86  | 88,749.81  |
| 750  | Lower Potomac     | Potomac                 | Above     | 7,396.16                  | 52.40   | 6,708.99  | 47.57   | 5.07                         | 0.04    | 12,724.97  | 14,104.24  | 15,584.41  |
| 760  | Upper Patuxent    | West Chesapeake         | Below     | 34,702.13                 | 84.88   | 6,178.26  | 15.11   | 1.11                         | 0.00    | 35,996.72  | 40,881.56  | 46,091.22  |
| 770  | Upper Choptank    | Upper Eastern Shore     | Below     | 24.26                     | 1.83    | 389.68    | 93.60   | 2.40                         | 0.58    | 126.31     | 416.33     | 758.27     |
| 780  | Upper Nanticoke   | Lower Eastern Shore     | Below     | -                         | -       | 469.84    | 99.72   | 1.37                         | 0.28    | 341.46     | 471.16     | 618.73     |
| 800  | Coast 1a          | Upper Eastern Shore     | Below     | 2,276.05                  | 54.07   | 1,928.48  | 45.81   | 5.03                         | 0.12    | 2,977.13   | 4,209.56   | 5,482.44   |
| 810  | Coast 1b          | Upper Eastern Shore     | Below     | -                         | -       | 2,514.47  | 99.06   | 23.78                        | 0.94    | 1,521.69   | 2,538.25   | 3,582.26   |
| 820  | Coast 1c          | Upper Eastern Shore     | Below     | -                         | -       | 4,215.76  | 99.88   | 5.05                         | 0.12    | 3,221.53   | 4,220.82   | 5,252.88   |
| 830  | Coast 1d          | Upper Eastern Shore     | Below     | 7,674.68                  | 65.68   | 3,993.59  | 34.18   | 16.72                        | 0.14    | 10,385.41  | 11,685.00  | 13,133.33  |
| 840  | Coast 1e          | Upper Eastern Shore     | Below     | 2,334.84                  | 78.32   | 641.53    | 21.52   | 4.95                         | 0.17    | 2,493.39   | 2,981.31   | 3,558.89   |
| 850  | Coast 6a          | West Chesapeake         | Below     | 35,948.50                 | 94.87   | 1,945.46  | 5.13    | -                            | -       | 36,318.75  | 37,893.93  | 39,509.07  |
| 860  | Coast 6b          | West Chesapeake         | Below     | 482,548.70                | 100.00  | 6.89      | 0.00    | -                            | -       | 472,156.70 | 482,555.40 | 492,991.30 |
| 870  | Coast 6c          | West Chesapeake         | Below     | 35,433.50                 | 99.94   | 22.72     | 0.06    | -                            | -       | 32,836.33  | 35,456.31  | 38,354.40  |

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
 URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
 OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
 MODEL SEGMENT SUMMARIES

| CHESAPEAKE BAY PROGRAM<br>MODEL SEGMENTS: POPULATION |                |                        |           | 2. Population             |              |         |            |         |          |                              |              |               |               |
|--|----------------|------------------------|-----------|---------------------------|--------------|---------|------------|---------|----------|------------------------------|--------------|---------------|---------------|
| Mod Seg  | Name           | Sub-basin              | Fall Line | a. POPULATION USING SEWER |              |         |            |         |          | TOTAL POPULATION USING SEWER |              |               |               |
|  |                |                        |           | AS:                       | URBAN        | % Total | RURAL      | % Total | FARM     | % Total                      | MIN          | MEAN          | MAX           |
| 880  | Coast 5        | Potomac/Mid Chesapeake | Below     |                           | 61,071.43    | 93.09   | 4,523.49   | 6.90    | 8.59     | 0.01                         | 50,434.24    | 63,603.51     | 71,157.00     |
| 890  | Potomac 1      | Potomac                | Below     |                           | 519,172.40   | 99.98   | 14.43      | 0.02    | 0.07     | 0.00                         | 513,037.90   | 519,256.90    | 525,508.50    |
| 900  | Potomac 2      | Potomac                | Below     |                           | 809,181.79   | 99.96   | 290.27     | 0.04    | -        | -                            | 796,180.13   | 809,472.19    | 822,778.21    |
| 910  | Potomac 3      | Potomac                | Below     |                           | 312,010.04   | 98.34   | 5,265.51   | 1.66    | 1.83     | 0.00                         | 307,321.97   | 317,280.36    | 327,121.05    |
| 920  | Potomac 4      | Potomac                | Below     |                           | 38,949.52    | 81.37   | 8,816.89   | 18.56   | 33.02    | 0.07                         | 13,006.63    | 47,869.17     | 53,182.72     |
| 930  | Coast 8:       | Rappahannock           | Below     |                           | -            | -       | 647.66     | 98.67   | 8.73     | 1.33                         | 315.23       | 656.18        | 1,351.32      |
| 940  | Coast 8b       | Rappahannock           | Below     |                           | 61.68        | 3.62    | 1,637.52   | 35.98   | 6.97     | 0.41                         | 784.50       | 1,706.17      | 2,794.77      |
| 950  | Coast 8c       | Rappahannock           | Below     |                           | 138,284.09   | 98.40   | 2,227.17   | 1.58    | 25.25    | 0.02                         | 115,339.95   | 140,536.52    | 145,734.56    |
| 960  | Coast 9        | James                  | Below     |                           | 613,501.69   | 100.00  | 0.68       | 0.00    | -        | -                            | 598,293.59   | 613,502.39    | 628,788.10    |
| 970  | Potomac 5      | Potomac                | Below     |                           | 25,312.60    | 90.79   | 2,560.88   | 9.19    | 5.81     | 0.02                         | 26,682.73    | 27,879.25     | 29,089.40     |
| 980  | Potomac 6      | Potomac                | Below     |                           | 12,616.32    | 40.43   | 18,515.12  | 59.56   | 4.21     | 0.01                         | 27,448.74    | 31,205.64     | 35,396.75     |
| 990  | Coast 11       | Potomac/Mid Chesapeake | Below     |                           | 1,901.36     | 75.23   | 623.10     | 24.74   | 0.36     | 0.01                         | 2,300.76     | 2,526.12      | 2,772.26      |
|  | CHESAPEAKE BAY |                        |           |                           | 15,010.48    | 89.04   | 1,963.11   | 10.93   | 4.76     | 0.03                         | 16,762.81    | 17,980.16     | 19,172.37     |
|  | JAMES RIVER    |                        |           |                           | 6,934.13     | 98.66   | 94.16      | 1.34    | 0.05     | 0.00                         | 6,806.37     | 7,028.13      | 7,156.54      |
|  | PATUXENT RIVER |                        |           |                           | 11.86        | 30.93   | 26.47      | 69.04   | 0.01     | 0.03                         | 24.62        | 38.33         | 54.83         |
|  | POTOMAC RIVER  |                        |           |                           | 4,461.74     | 95.23   | 223.19     | 4.76    | 0.35     | 0.01                         | 4,483.77     | 4,685.19      | 4,905.29      |
|  | RAPPAHANNOCK   |                        |           |                           | 385.77       | 83.16   | 77.71      | 16.75   | 0.44     | 0.09                         | 401.37       | 463.91        | 538.45        |
|  | YORK RIVER     |                        |           |                           | 162.70       | 96.23   | 6.38       | 1.77    | 0.01     | 0.00                         | 88.36        | 149.08        | 253.11        |
|  | Grand Total    |                        |           |                           | 9,185,017.78 | 91.72   | 825,592.04 | 1.24    | 3,110.09 | 6.03                         | 9,511,967.66 | 10,014,162.30 | 10,540,217.75 |

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
MODEL SEGMENT SUMMARIES

CHESAPEAKE BAY PROGRAM  
MODEL SEGMENTS: POPULATION

b. POPULATION USING SEPTIC

TOTAL POPULATION  
USING SEPTIC

| Mod Seg | Name              | Sub-basin    | Fall Line | AS:       |         |            |         |          |         | TOTAL POPULATION<br>USING SEPTIC |            |            |
|---------|-------------------|--------------|-----------|-----------|---------|------------|---------|----------|---------|----------------------------------|------------|------------|
|         |                   |              |           | URBAN     | % Total | RURAL      | % Total | FARM     | % Total | MIN                              | MEAN       | MAX        |
| 10      | East Branch 1     | Susquehanna  | Above     | 12,965.20 | 11.67   | 93,370.49  | 84.04   | 4,762.95 | 4.29    | 99,131.21                        | 111,098.60 | 123,844.14 |
| 20      | East Branch 1     | Susquehanna  | Above     | 18,115.06 | 7.64    | 218,007.81 | 88.56   | 9,344.34 | 3.80    | 219,777.21                       | 246,167.65 | 274,000.47 |
| 30      | East Branch 2     | Susquehanna  | Above     | 9,254.90  | 9.27    | 87,135.63  | 87.32   | 3,392.47 | 3.40    | 89,363.75                        | 99,787.61  | 111,811.76 |
| 40      | East Branch 2     | Susquehanna  | Above     | 6,115.82  | 6.08    | 91,256.21  | 90.74   | 3,292.02 | 3.18    | 88,214.37                        | 100,574.20 | 114,405.36 |
| 50      | West Branch       | Susquehanna  | Above     | 160.66    | 1.05    | 52,115.81  | 97.18   | 951.11   | 1.77    | 48,208.34                        | 53,627.18  | 59,216.34  |
| 60      | West Branch       | Susquehanna  | Above     | 3,104.24  | 4.82    | 66,156.28  | 91.05   | 2,995.68 | 4.12    | 63,431.66                        | 72,656.12  | 82,617.21  |
| 70      | West Branch       | Susquehanna  | Above     | 4,928.95  | 7.66    | 56,147.39  | 87.27   | 3,252.75 | 5.07    | 58,830.81                        | 64,339.07  | 70,118.98  |
| 80      | Lower Susquehanna | Susquehanna  | Above     | 5,172.28  | 3.96    | 126,497.03 | 89.92   | 8,610.80 | 6.12    | 125,429.69                       | 140,680.14 | 156,817.22 |
| 90      | Juniata           | Susquehanna  | Above     | 0.30      | 0.00    | 33,871.00  | 94.74   | 1,810.73 | 5.26    | 33,412.11                        | 35,752.03  | 38,115.51  |
| 100     | Juniata           | Susquehanna  | Above     | 5,777.45  | 5.51    | 93,633.66  | 89.24   | 5,516.73 | 5.26    | 91,889.38                        | 104,928.06 | 118,977.89 |
| 110     | Lower Susquehanna | Susquehanna  | Above     | 26,362.05 | 12.37   | 178,055.16 | 83.55   | 8,661.91 | 4.07    | 181,462.15                       | 213,084.75 | 246,847.80 |
| 120     | Conowingo         | Susquehanna  | Above     | 413.40    | 1.30    | 30,017.73  | 88.25   | 3,512.45 | 10.44   | 10,891.13                        | 34,013.59  | 37,139.92  |
| 140     | Conowingo         | Susquehanna  | Above     | 120.64    | 0.41    | 27,041.21  | 92.79   | 1,910.88 | 6.80    | 27,266.63                        | 29,142.71  | 31,041.03  |
| 150     | Upper Potomac     | Potomac      | Above     | 3,782.12  | 10.70   | 30,320.60  | 85.79   | 1,238.39 | 3.50    | 27,616.99                        | 35,341.11  | 43,449.55  |
| 170     | Upper Potomac     | Potomac      | Above     | -         | -       | 15,870.70  | 91.11   | 1,534.93 | 8.82    | 14,467.94                        | 17,405.63  | 20,486.43  |
| 175     | Upper Potomac     | Potomac      | Above     | 0.04      | 0.00    | 20,007.07  | 94.21   | 1,229.49 | 5.75    | 18,397.56                        | 21,227.60  | 24,091.22  |
| 180     | Mid Potomac       | Potomac      | Above     | 9,911.56  | 16.50   | 47,130.48  | 78.46   | 3,030.33 | 5.04    | 51,423.59                        | 60,072.32  | 69,081.44  |
| 190     | Shenandoah        | Potomac      | Above     | 6,897.44  | 8.66    | 66,694.18  | 83.78   | 6,014.60 | 7.56    | 66,768.30                        | 79,606.31  | 92,936.48  |
| 200     | Shenandoah        | Potomac      | Above     | 2,110.29  | 3.29    | 58,290.85  | 90.80   | 3,791.79 | 5.91    | 53,662.39                        | 64,196.81  | 74,836.35  |
| 210     | Lower Potomac     | Potomac      | Above     | 18,619.18 | 22.17   | 61,370.03  | 73.08   | 3,989.81 | 4.75    | 74,010.63                        | 83,979.07  | 94,269.58  |
| 220     | Lower Potomac     | Potomac      | Above     | 39,627.73 | 50.14   | 37,094.50  | 46.94   | 2,301.18 | 2.92    | 63,156.90                        | 79,030.43  | 96,094.41  |
| 230     | Rappahannock      | Rappahannock | Above     | 1,042.40  | 1.66    | 57,956.68  | 92.31   | 3,781.61 | 6.03    | 58,850.69                        | 62,782.65  | 69,766.16  |
| 235     | Mattaponi         | York         | Above     | 711.76    | 5.38    | 13,214.33  | 91.01   | 521.00   | 3.60    | 12,776.44                        | 14,519.10  | 16,261.76  |
| 240     | Mattaponi         | York         | Above     | -         | -       | 10,518.41  | 97.15   | 309.04   | 2.83    | 9,353.96                         | 10,827.45  | 12,306.96  |
| 250     | Pamunkey          | York         | Above     | 19.42     | 0.17    | 10,651.41  | 93.05   | 531.33   | 4.78    | 10,009.29                        | 11,206.15  | 12,407.43  |
| 260     | Pamunkey          | York         | Above     | 203.22    | 0.70    | 27,380.72  | 94.14   | 1,501.13 | 5.16    | 26,047.56                        | 29,086.08  | 32,143.79  |
| 265     | James             | James        | Above     | -         | -       | 1,360.17   | 91.12   | 132.62   | 8.88    | 1,059.41                         | 1,492.80   | 1,926.18   |
| 270     | James             | James        | Above     | 283.47    | 0.63    | 42,234.87  | 93.19   | 2,804.10 | 6.19    | 31,380.22                        | 45,322.39  | 52,503.18  |
| 280     | James             | James        | Above     | 31,944.51 | 25.22   | 90,986.27  | 71.83   | 3,734.44 | 2.95    | 101,983.04                       | 126,665.29 | 145,138.10 |
| 290     | James             | James        | Above     | 3,175.60  | 12.41   | 21,525.27  | 84.15   | 878.55   | 3.43    | 21,891.99                        | 25,579.42  | 29,505.61  |
| 300     | Appomattox        | Appomattox   | Above     | 376.47    | 1.23    | 28,217.63  | 92.29   | 1,980.35 | 6.48    | 24,478.66                        | 30,574.43  | 34,695.80  |
| 310     | Appomattox        | Appomattox   | Above     | 22.23     | 0.43    | 4,853.52   | 94.59   | 255.32   | 4.98    | 4,693.94                         | 5,131.07   | 5,568.11   |
| 330     | Patuxent          | Patuxent     | Above     | 3,414.06  | 17.87   | 15,070.71  | 78.83   | 631.85   | 3.30    | 17,872.92                        | 19,119.10  | 20,398.03  |
| 340     | Patuxent          | Patuxent     | Above     | 7,634.50  | 37.49   | 12,279.72  | 60.30   | 449.66   | 2.21    | 14,585.04                        | 20,363.64  | 27,021.92  |

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
MODEL SEGMENT SUMMARIES

| CHESAPEAKE BAY PROGRAM<br>MODEL SEGMENTS: POPULATION |                   |                         |           |           |         |           |         |          |         |                                  |            |            |
|--|-------------------|-------------------------|-----------|-----------|---------|-----------|---------|----------|---------|----------------------------------|------------|------------|
| b. POPULATION USING SEPTIC                           |                   |                         |           |           |         |           |         |          |         | TOTAL POPULATION<br>USING SEPTIC |            |            |
| Mod Seg  | Name              | Sub-basin               | Fall Line | AS:       |         |           |         |          |         | MIN                              | MEAN       | MAX        |
|  |                   |                         |           | URBAN     | % Total | RURAL     | % Total | FARM     | % Total |                                  |            |            |
| 370  | Bohemia           | Upper Eastern Shore     | Below     | 2.51      | 0.09    | 2,608.90  | 91.39   | 152.48   | 5.52    | 2,532.63                         | 2,761.89   | 2,995.57   |
| 380  | Chester           | Upper Eastern Shore     | Below     | 330.13    | 1.92    | 15,348.79 | 89.23   | 1,522.96 | 8.85    | 14,881.70                        | 17,201.88  | 19,344.70  |
| 390  | Wye               | Upper Eastern Shore     | Below     | -         | -       | 3,929.24  | 91.41   | 277.09   | 6.59    | 3,691.25                         | 4,204.33   | 4,721.41   |
| 400  | Lower Choptank    | Upper Eastern Shore     | Below     | 504.62    | 2.30    | 19,424.84 | 81.36   | 2,053.18 | 9.34    | 19,185.30                        | 21,987.65  | 24,854.26  |
| 410  | Lower Nanticoke   | Lower Eastern Shore     | Below     | 1,119.72  | 2.53    | 40,385.40 | 91.42   | 2,671.70 | 6.05    | 39,335.96                        | 44,176.80  | 49,017.72  |
| 420  | Wiconisco         | Lower Eastern Shore     | Below     | 565.08    | 2.04    | 26,269.14 | 94.96   | 806.04   | 2.91    | 23,939.15                        | 27,662.52  | 31,600.45  |
| 430  | Pocomoke          | Lower Eastern Shore     | Below     | 185.20    | 0.75    | 22,522.63 | 91.07   | 2,024.22 | 8.18    | 21,463.36                        | 24,732.06  | 21,099.75  |
| 440  | Coast 4           | Lower Eastern Shore     | Below     | -         | -       | 15,355.29 | 91.87   | 661.57   | 4.13    | 13,849.80                        | 16,016.86  | 18,221.37  |
| 450  | Coast 11          | West Chesapeake         | Below     | 14,566.32 | 12.92   | 92,393.78 | 81.94   | 5,791.55 | 5.14    | 101,071.44                       | 112,751.67 | 124,710.68 |
| 470  | Gunpowder         | West Chesapeake         | Below     | 25,453.39 | 29.77   | 53,346.48 | 67.72   | 1,971.41 | 2.50    | 70,202.03                        | 78,771.36  | 87,899.65  |
| 480  | Baltimore         | West Chesapeake         | Below     | 5,606.38  | 60.44   | 6,229.15  | 39.19   | 57.71    | 0.36    | 9,380.41                         | 15,891.22  | 24,460.95  |
| 490  | Lower Patuxent    | West Chesapeake         | Below     | 22,645.63 | 83.66   | 4,313.86  | 15.94   | 109.05   | 0.40    | 18,866.77                        | 27,061.57  | 36,632.42  |
| 500  | Patuxent          | Patuxent/Mid Chesapeake | Below     | 13,608.42 | 22.50   | 51,784.09 | 74.63   | 1,966.45 | 2.83    | 62,395.32                        | 69,381.69  | 76,702.24  |
| 510  | Severn            | Patuxent/Mid Chesapeake | Below     | 11,810.42 | 56.90   | 8,914.62  | 42.95   | 32.99    | 0.16    | 17,906.75                        | 20,751.00  | 23,722.43  |
| 540  | Anacostia         | Potomac                 | Below     | 7,250.95  | 82.14   | 1,532.01  | 17.36   | 41.61    | 0.47    | 2,978.84                         | 8,827.24   | 16,321.49  |
| 550  | Oocoquan          | Potomac                 | Below     | 9,674.99  | 14.61   | 53,156.94 | 83.27   | 1,406.89 | 2.12    | 56,823.26                        | 66,231.79  | 76,483.15  |
| 560  | Rappahannock      | Rappahannock            | Below     | 2,742.07  | 7.23    | 33,730.94 | 84.93   | 1,454.92 | 3.84    | 31,136.84                        | 37,927.93  | 44,893.03  |
| 580  | Great Wicomico    | Rappahannock            | Below     | -         | -       | 2,680.10  | 97.09   | 80.37    | 2.91    | 2,363.86                         | 2,766.47   | 3,157.07   |
| 590  | York              | Rappahannock            | Below     | 13,038.38 | 25.08   | 37,850.74 | 72.80   | 1,103.86 | 2.12    | 47,109.33                        | 51,992.99  | 57,143.78  |
| 600  | James             | James                   | Below     | 36,617.13 | 38.45   | 57,289.43 | 60.16   | 1,316.38 | 1.38    | 68,801.35                        | 95,222.92  | 124,440.64 |
| 610  | Chickahominy      | James                   | Below     | 12,177.24 | 42.25   | 16,254.35 | 56.39   | 391.06   | 1.36    | 21,192.36                        | 28,822.67  | 37,350.98  |
| 620  | Nansenond         | James                   | Below     | 11,885.07 | 64.38   | 6,206.01  | 33.62   | 369.68   | 2.00    | 15,781.56                        | 18,460.79  | 21,377.57  |
| 630  | Elizabeth         | James                   | Below     | 2,208.47  | 99.51   | 9.38      | 0.42    | 1.48     | 0.07    | 1,107.87                         | 2,219.33   | 3,586.77   |
| 700  | East Branch 1     | Susquehanna             | Above     | 2.62      | 0.03    | 7,596.14  | 91.61   | 693.33   | 8.36    | 7,779.19                         | 8,292.10   | 8,816.12   |
| 710  | Lower Susquehanna | Susquehanna             | Above     | 3,753.00  | 10.28   | 30,517.68 | 83.61   | 2,230.33 | 6.11    | 30,460.68                        | 36,301.03  | 42,889.09  |
| 720  | Conowingo         | Susquehanna             | Above     | 6,441.66  | 8.67    | 60,075.98 | 80.89   | 7,689.89 | 10.35   | 60,468.30                        | 74,264.96  | 89,089.34  |
| 730  | Mid Potomac       | Potomac                 | Above     | 455.58    | 1.42    | 29,129.16 | 90.71   | 2,329.37 | 7.88    | 26,877.29                        | 32,114.08  | 37,450.36  |
| 740  | Mid Potomac       | Potomac                 | Above     | 3,127.35  | 3.33    | 87,655.83 | 93.25   | 3,221.61 | 3.43    | 81,731.55                        | 94,004.77  | 106,610.47 |
| 750  | Lower Potomac     | Potomac                 | Above     | 45.66     | 0.35    | 12,050.79 | 93.51   | 790.91   | 6.14    | 11,270.69                        | 12,887.39  | 14,518.95  |
| 760  | Upper Patuxent    | West Chesapeake         | Below     | 7,373.33  | 12.30   | 51,411.51 | 85.73   | 1,180.77 | 1.97    | 53,860.80                        | 59,965.61  | 66,207.64  |
| 770  | Upper Choptank    | Upper Eastern Shore     | Below     | 6.41      | 0.07    | 8,730.58  | 94.91   | 461.91   | 5.02    | 8,681.53                         | 9,198.89   | 9,716.25   |
| 780  | Upper Nanticoke   | Lower Eastern Shore     | Below     | 2.37      | 0.06    | 3,444.47  | 89.93   | 383.40   | 10.01   | 3,609.14                         | 3,830.24   | 4,031.34   |
| 800  | Coast 1a          | Upper Eastern Shore     | Below     | 945.14    | 9.52    | 8,766.44  | 88.32   | 213.95   | 2.16    | 8,606.27                         | 9,925.53   | 11,257.68  |
| 810  | Coast 1b          | Upper Eastern Shore     | Below     | -         | -       | 5,446.73  | 92.10   | 466.95   | 7.90    | 4,766.82                         | 5,913.69   | 7,070.42   |

Table 10

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
MODEL SEGMENT SUMMARIES

| CHESAPEAKE BAY PROGRAM<br>MODEL SEGMENTS: POPULATION |           |                         |           |            |         |              |         |            |         | TOTAL POPULATION<br>USING SEPTIC |              |              |
|--|-----------|-------------------------|-----------|------------|---------|--------------|---------|------------|---------|----------------------------------|--------------|--------------|
| b. POPULATION USING SEPTIC                           |           |                         |           |            |         |              |         |            |         |                                  |              |              |
| AS:  |           |                         |           |            |         |              |         |            |         |                                  |              |              |
| Mod Seg  | Name      | Sub-basin               | Fall Line | URBAN      | % Total | RURAL        | % Total | FARM       | % Total | MIN                              | MEAN         | MAX          |
| 820  | Coast 1a  | Upper Eastern Shore     | Below     | -          | -       | 9,312.91     | 98.83   | 110.71     | 1.17    | 8,185.44                         | 9,423.61     | 10,482.21    |
| 830  | Coast 1d  | Upper Eastern Shore     | Below     | 340.31     | 3.53    | 8,762.99     | 90.82   | 545.74     | 5.66    | 8,226.64                         | 9,649.04     | 11,206.31    |
| 840  | Coast 1e  | Upper Eastern Shore     | Below     | 29.90      | 0.44    | 6,467.23     | 95.51   | 274.35     | 4.05    | 5,799.55                         | 6,771.49     | 7,761.23     |
| 850  | Coast 6a  | West Chesapeake         | Below     | 1,165.33   | 40.92   | 1,682.26     | 59.08   | -          | -       | 1,422.24                         | 2,847.60     | 4,430.03     |
| 860  | Coast 6b  | West Chesapeake         | Below     | 5,274.23   | 84.41   | 974.24       | 15.59   | -          | -       | 2,087.95                         | 6,248.47     | 12,492.21    |
| 870  | Coast 6c  | West Chesapeake         | Below     | 22,154.08  | 90.36   | 2,354.66     | 9.60    | -          | -       | 21,557.05                        | 24,516.91    | 27,605.13    |
| 880  | Coast 5   | Patuxent/Mid Chesapeake | Below     | 15,651.27  | 40.33   | 22,462.58    | 57.88   | 695.30     | 1.79    | 33,010.53                        | 38,809.18    | 44,772.36    |
| 890  | Potomac 1 | Potomac                 | Below     | 2,330.32   | 50.57   | 2,264.53     | 49.14   | 13.16      | 0.29    | 2,519.80                         | 4,608.21     | 7,736.25     |
| 900  | Potomac 2 | Potomac                 | Below     | 11,014.55  | 83.10   | 2,202.74     | 16.62   | 37.40      | 0.28    | 4,506.00                         | 13,255.11    | 24,492.74    |
| 910  | Potomac 3 | Potomac                 | Below     | 9,695.32   | 47.64   | 19,447.92    | 51.34   | 205.70     | 1.01    | 12,617.94                        | 20,349.66    | 29,272.98    |
| 920  | Potomac 4 | Potomac                 | Below     | 4,646.89   | 8.02    | 50,609.19    | 87.38   | 2,661.70   | 4.60    | 50,417.70                        | 57,917.75    | 65,580.83    |
| 930  | Coast 8a  | Rappahannock            | Below     | -          | -       | 1,015.57     | 95.63   | 137.64     | 4.37    | 2,668.66                         | 3,153.21     | 3,637.76     |
| 940  | Coast 8b  | Rappahannock            | Below     | 485.21     | 2.00    | 21,257.89    | 95.83   | 526.40     | 2.17    | 22,276.26                        | 24,269.55    | 26,262.85    |
| 950  | Coast 8c  | Rappahannock            | Below     | 9,835.32   | 71.36   | 3,900.33     | 28.38   | 8.70       | 0.06    | 9,289.08                         | 13,744.35    | 18,706.86    |
| 960  | Coast 9   | James                   | Below     | 21,262.77  | 99.65   | 64.28        | 0.30    | 9.48       | 0.04    | 11,205.95                        | 21,336.53    | 34,546.97    |
| 970  | Potomac 5 | Potomac                 | Below     | 705.79     | 18.49   | 3,066.74     | 80.33   | 45.12      | 1.18    | 2,826.56                         | 3,817.65     | 4,986.34     |
| 980  | Potomac 6 | Potomac                 | Below     | 719.24     | 1.96    | 35,183.45    | 95.82   | 817.22     | 2.23    | 31,650.14                        | 36,719.90    | 41,944.57    |
| 990  | Coast 12  | Patuxent/Mid Chesapeake | Below     | 91.11      | 5.15    | 1,618.03     | 91.47   | 59.74      | 3.38    | 1,479.69                         | 1,768.85     | 2,071.65     |
| CHESAPEAKE BAY                                       |           |                         |           | 2,474.95   | 32.37   | 5,023.38     | 65.71   | 145.97     | 1.91    | 6,341.39                         | 7,644.83     | 9,046.46     |
| JAMES RIVER  |           |                         |           | 153.91     | 30.11   | 345.30       | 67.55   | 11.98      | 2.34    | 731.23                           | 921.40       | 1,147.78     |
| PATUXENT RIVER                                       |           |                         |           | 95.83      | 8.03    | 1,061.60     | 88.98   | 35.66      | 2.99    | 480.78                           | 511.19       | 541.97       |
| POTOMAC RIVER  |           |                         |           | 29.91      | 5.66    | 484.09       | 91.55   | 14.76      | 2.79    | 990.07                           | 1,193.10     | 1,416.15     |
| RAPPAHANNOCK   |           |                         |           | 654.06     | 69.94   | 277.23       | 29.64   | 3.88       | 0.42    | 434.40                           | 528.76       | 623.54       |
| YORK RIVER   |           |                         |           | 551,782.83 | 15.31   | 2,899,193.39 | 80.48   | 151,259.03 | 4.20    | 834.75                           | 935.17       | 1,035.97     |
| Grand Total  |           |                         |           |            |         |              |         |            |         | 3,080,823.42                     | 3,603,064.21 | 4,167,616.70 |

Table 10

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
MODEL SEGMENT SUMMARIES

| CHESAPEAKE BAY PROGRAM<br>MODEL SEGMENTS: POPULATION |                   |              |           |          |         |          |         |        |         |                                       |          |           |            |
|--|-------------------|--------------|-----------|----------|---------|----------|---------|--------|---------|---------------------------------------|----------|-----------|------------|
| c. POPULATION USING OTHER MEANS OF DISPOSAL          |                   |              |           |          |         |          |         |        |         | TOTAL POPULATION<br>USING OTHER MEANS |          |           |            |
| AS:  |                   |              |           |          |         |          |         |        |         |                                       |          |           |            |
| Mod Seg  | Name              | Sub-basin    | Fall Line | URBAN    | % Total | RURAL    | % Total | FARM   | % Total | MIN                                   | MEAN     | MAX       |            |
| 10   | East Branch 1     | Susquehanna  | Above     | 148.82   | 3.73    | 3,343.10 | 83.75   | 500.07 | 12.53   | 590.66                                | 3,991.99 | 8,862.31  | 221,144.0  |
| 20   | East Branch 1     | Susquehanna  | Above     | 269.95   | 4.77    | 4,956.21 | 87.56   | 434.04 | 7.67    | 634.08                                | 5,660.19 | 14,456.31 | 477,648.0  |
| 30   | East Branch 2     | Susquehanna  | Above     | 516.18   | 12.47   | 3,498.05 | 84.51   | 125.05 | 3.02    | 1,208.30                              | 4,139.27 | 8,121.30  | 384,881.6  |
| 40   | East Branch 2     | Susquehanna  | Above     | 332.38   | 16.56   | 2,631.91 | 81.88   | 50.00  | 1.56    | 439.97                                | 3,214.28 | 7,141.15  | 344,388.7  |
| 50   | West Branch       | Susquehanna  | Above     | 0.54     | 0.01    | 3,761.78 | 99.03   | 36.13  | 0.95    | 1,412.30                              | 3,798.43 | 6,413.09  | 97,177.0   |
| 60   | West Branch       | Susquehanna  | Above     | 188.95   | 4.29    | 4,062.31 | 92.22   | 153.99 | 3.50    | 1,621.86                              | 4,405.25 | 7,633.93  | 212,060.5  |
| 70   | West Branch       | Susquehanna  | Above     | 37.47    | 2.08    | 1,619.09 | 89.98   | 142.91 | 7.94    | 232.11                                | 1,799.46 | 3,712.74  | 119,544.7  |
| 80   | Lower Susquehanna | Susquehanna  | Above     | 479.83   | 7.34    | 5,371.03 | 82.14   | 687.93 | 10.52   | 2,119.97                              | 6,538.79 | 12,189.02 | 331,196.9  |
| 90   | Junata            | Susquehanna  | Above     | 0.02     | 0.00    | 971.93   | 95.96   | 40.94  | 4.04    | 147.82                                | 1,012.90 | 2,052.63  | 46,204.3   |
| 100  | Junata            | Susquehanna  | Above     | 181.19   | 3.68    | 4,104.93 | 83.45   | 632.71 | 12.86   | 1,078.60                              | 4,918.83 | 9,849.60  | 246,608.0  |
| 110  | Lower Susquehanna | Susquehanna  | Above     | 892.57   | 15.01   | 4,831.58 | 81.27   | 220.87 | 3.72    | 575.26                                | 5,945.01 | 13,691.61 | 640,761.8  |
| 120  | Conowingo         | Susquehanna  | Above     | 32.03    | 3.03    | 853.31   | 80.78   | 171.06 | 16.19   | 81.19                                 | 1,056.40 | 2,387.28  | 43,990.9   |
| 140  | Conowingo         | Susquehanna  | Above     | 0.09     | 0.01    | 1,355.11 | 95.40   | 65.25  | 4.59    | 275.57                                | 1,420.44 | 2,776.78  | 31,763.8   |
| 160  | Upper Potomac     | Potomac      | Above     | 146.98   | 8.47    | 1,508.80 | 86.96   | 79.27  | 4.57    | 124.10                                | 1,735.06 | 4,207.25  | 111,112.9  |
| 170  | Upper Potomac     | Potomac      | Above     | -        | -       | 2,410.16 | 88.40   | 316.14 | 11.60   | 821.47                                | 2,726.29 | 4,885.55  | 21,604.0   |
| 175  | Upper Potomac     | Potomac      | Above     | -        | -       | 2,124.24 | 92.09   | 182.58 | 7.91    | 536.05                                | 2,306.82 | 4,316.10  | 21,467.41  |
| 180  | Mid Potomac       | Potomac      | Above     | 73.27    | 3.82    | 1,698.29 | 88.52   | 147.01 | 7.66    | 96.53                                 | 1,918.57 | 4,684.95  | 141,381.1  |
| 190  | Shenandoah        | Potomac      | Above     | 325.26   | 8.20    | 3,393.34 | 85.60   | 245.80 | 6.20    | 103.20                                | 3,964.40 | 9,260.51  | 172,346.65 |
| 200  | Shenandoah        | Potomac      | Above     | 26.64    | 0.63    | 3,998.51 | 94.38   | 211.26 | 4.99    | 465.95                                | 4,236.41 | 9,069.43  | 111,552.64 |
| 210  | Lower Potomac     | Potomac      | Above     | 407.28   | 15.70   | 2,178.38 | 83.99   | 7.99   | 0.31    | 202.84                                | 2,593.66 | 6,068.58  | 171,090.01 |
| 220  | Lower Potomac     | Potomac      | Above     | 1,031.27 | 49.63   | 1,007.60 | 48.50   | 38.84  | 1.87    | 33.69                                 | 2,077.71 | 5,337.89  | 604,850.69 |
| 230  | Rappahannock      | Rappahannock | Above     | 150.38   | 2.98    | 4,654.63 | 92.17   | 244.79 | 4.85    | 1,238.60                              | 5,049.80 | 9,372.16  | 90,679.53  |
| 235  | Mattaponi         | York         | Above     | 9.28     | 1.52    | 592.85   | 97.28   | 7.32   | 1.20    | 32.13                                 | 609.45   | 1,372.51  | 21,265.84  |
| 240  | Mattaponi         | York         | Above     | -        | -       | 950.15   | 98.13   | 18.12  | 1.87    | 144.45                                | 968.27   | 1,877.48  | 11,389.55  |
| 250  | Pamunkey          | York         | Above     | 0.58     | 0.06    | 889.26   | 95.73   | 39.10  | 4.21    | 171.52                                | 928.93   | 1,790.99  | 11,762.65  |
| 260  | Pamunkey          | York         | Above     | 4.60     | 0.19    | 2,407.61 | 97.31   | 62.04  | 2.51    | 375.57                                | 2,474.25 | 4,783.51  | 33,811.71  |
| 265  | James             | James        | Above     | -        | -       | 384.72   | 92.96   | 29.15  | 7.04    | 138.79                                | 413.88   | 716.20    | 2,557.91   |
| 270  | James             | James        | Above     | 56.56    | 1.36    | 3,905.45 | 93.75   | 203.90 | 4.89    | 556.02                                | 4,165.90 | 8,575.94  | 80,254.75  |
| 280  | James             | James        | Above     | 455.65   | 5.90    | 6,941.19 | 89.93   | 321.31 | 4.16    | 1,424.62                              | 7,718.14 | 15,289.50 | 255,078.10 |
| 290  | James             | James        | Above     | 35.93    | 2.87    | 1,203.59 | 95.99   | 14.40  | 1.15    | 176.98                                | 1,253.91 | 2,691.14  | 91,233.37  |
| 300  | Appomattox        | Appomattox   | Above     | 25.12    | 1.02    | 2,280.12 | 92.40   | 162.33 | 6.58    | 310.38                                | 2,467.57 | 5,087.09  | 41,164.24  |
| 310  | Appomattox        | Appomattox   | Above     | -        | -       | 196.91   | 93.22   | 14.33  | 6.78    | 24.13                                 | 211.24   | 459.00    | 6214.05    |
| 330  | Patuxent          | Patuxent     | Above     | 42.47    | 17.39   | 201.80   | 82.61   | -      | -       | -                                     | 244.27   | 654.25    | 34,612.48  |
| 340  | Patuxent          | Patuxent     | Above     | 291.86   | 59.10   | 201.98   | 40.90   | -      | -       | 1.10                                  | 493.84   | 1,370.10  | 242,872.61 |

Table 10

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
 URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
 OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
 MODEL SEGMENT SUMMARIES

| CHESAPEAKE BAY PROGRAM<br>MODEL SEGMENTS: POPULATION |                   |                         |           | c. POPULATION USING OTHER MEANS OF DISPOSAL |         |          |         |        |         | TOTAL POPULATION<br>USING OTHER MEANS |          |           | TOTAL      |
|--|-------------------|-------------------------|-----------|---|---------|----------|---------|--------|---------|---------------------------------------|----------|-----------|------------|
| Mod Seg  | Name              | Sub-basin               | Fall Line | URBAN                                       | % Total | RURAL    | % Total | FARM   | % Total | MIN                                   | MEAN     | MAX       |            |
| 370  | Bohemia           | Upper Eastern Shore     | Below     | -   | -       | 41.32    | 98.31   | 0.71   | 1.69    | -                                     | 42.03    | 108.34    | 3,305.38   |
| 380  | Chester           | Upper Eastern Shore     | Below     | 14.84                                       | 2.14    | 653.04   | 94.08   | 26.27  | 3.78    | 21.73                                 | 694.14   | 1,658.09  | 26,115.60  |
| 390  | Wye               | Upper Eastern Shore     | Below     | -   | -       | 141.77   | 98.82   | 1.70   | 1.18    | 0.03                                  | 143.47   | 349.31    | 5,983.93   |
| 400  | Lower Choptank    | Upper Eastern Shore     | Below     | 25.23                                       | 2.92    | 831.90   | 92.63   | 39.95  | 4.45    | 45.02                                 | 898.08   | 2,112.84  | 40,865.50  |
| 410  | Lower Nanticoke   | Lower Eastern Shore     | Below     | 99.88                                       | 5.76    | 1,453.57 | 83.90   | 179.11 | 10.34   | 136.73                                | 1,732.56 | 3,787.76  | 63,866.09  |
| 420  | Wicomico          | Lower Eastern Shore     | Below     | 74.61                                       | 13.94   | 424.32   | 79.25   | 36.46  | 6.81    | 50.83                                 | 535.39   | 1,324.39  | 58,359.33  |
| 430  | Pocomoke          | Lower Eastern Shore     | Below     | 7.97  | 0.80    | 860.11   | 85.83   | 134.04 | 13.38   | 22.68                                 | 1,002.12 | 2,524.44  | 41,723.54  |
| 440  | Coast 4           | Lower Eastern Shore     | Below     | -   | -       | 1,805.60 | 92.08   | 155.35 | 7.92    | 344.14                                | 1,960.93 | 3,755.14  | 21,165.63  |
| 450  | Coast 11          | West Chesapeake         | Below     | 171.07                                      | 6.60    | 2,273.97 | 87.78   | 145.55 | 5.62    | 153.16                                | 2,590.59 | 6,239.21  | 203,320.58 |
| 470  | Gunpowder         | West Chesapeake         | Below     | 492.53                                      | 33.22   | 988.71   | 66.69   | 1.38   | 0.09    | 14.19                                 | 1,482.62 | 3,777.12  | 231,391.67 |
| 480  | Baltimore         | West Chesapeake         | Below     | 6,861.20                                    | 98.71   | 89.72    | 1.29    | -      | -       | 489.41                                | 6,950.92 | 16,181.74 | 373,882.34 |
| 490  | Lower Patapsco    | West Chesapeake         | Below     | 1,405.27                                    | 95.09   | 72.55    | 4.91    | -      | -       | 61.30                                 | 1,478.82 | 3,642.40  | 292,084.20 |
| 500  | Patuxent          | Patuxent/Mid Chesapeake | Below     | 435.34                                      | 19.89   | 1,579.06 | 71.98   | 177.87 | 8.11    | 173.38                                | 2,193.72 | 3,071.71  | 189,633.93 |
| 510  | Severn            | Patuxent/Mid Chesapeake | Below     | 212.35                                      | 69.18   | 93.89    | 30.59   | 0.72   | 0.24    | -                                     | 306.96   | 825.36    | 45,017.94  |
| 540  | Anacostia         | Potomac                 | Below     | 2,523.78                                    | 99.89   | 2.74     | 0.11    | -      | -       | 39.76                                 | 2,526.52 | 6,687.67  | 638,316.36 |
| 550  | Ocoquan           | Potomac                 | Below     | 411.22                                      | 23.37   | 1,322.29 | 75.14   | 26.16  | 1.49    | 68.87                                 | 1,759.67 | 4,416.66  | 336,114.92 |
| 560  | Rappahannock      | Rappahannock            | Below     | 29.19                                       | 1.05    | 2,516.95 | 90.55   | 233.46 | 8.40    | 329.99                                | 2,779.60 | 5,879.56  | 93,712.39  |
| 580  | Great Wicomico    | Rappahannock            | Below     | -   | -       | 197.54   | 93.73   | 13.23  | 6.27    | 2.11                                  | 210.76   | 482.86    | 3,214.02   |
| 590  | York              | Rappahannock            | Below     | 174.80                                      | 7.81    | 1,926.75 | 86.09   | 136.56 | 6.10    | 388.78                                | 2,238.10 | 4,393.41  | 75,668.15  |
| 600  | James             | James                   | Below     | 1,985.62                                    | 49.59   | 1,993.45 | 49.79   | 24.92  | 0.62    | 367.75                                | 4,003.99 | 9,894.74  | 732,119.74 |
| 610  | Chickahominy      | James                   | Below     | 244.38                                      | 20.41   | 359.13   | 69.59   | -      | -       | 33.80                                 | 803.51   | 2,016.69  | 162,012.68 |
| 620  | Nansemond         | James                   | Below     | 976.55                                      | 77.32   | 253.88   | 20.10   | 32.54  | 2.58    | 265.46                                | 1,262.97 | 2,458.22  | 57,312.18  |
| 630  | Elizabeth         | James                   | Below     | 44.64                                       | 99.66   | 0.13     | 0.28    | 0.03   | 0.06    | 0.44                                  | 44.79    | 132.32    | 46,612.98  |
| 700  | East Branch 1     | Susquehanna             | Above     | -   | -       | 333.25   | 94.24   | 20.35  | 3.76    | 122.80                                | 353.60   | 625.38    | 12,911.48  |
| 710  | Lower Susquehanna | Susquehanna             | Above     | 110.57                                      | 10.50   | 860.74   | 81.74   | 81.69  | 7.76    | 41.40                                 | 1,053.01 | 2,638.73  | 93,835.38  |
| 720  | Conowingo         | Susquehanna             | Above     | 1,208.81                                    | 32.09   | 1,788.79 | 47.48   | 769.03 | 20.41   | 557.43                                | 3,767.18 | 8,117.73  | 282,058.31 |
| 730  | Mid Potomac       | Potomac                 | Above     | 0.12  | 0.01    | 1,081.95 | 91.95   | 94.61  | 8.04    | 287.23                                | 1,176.67 | 2,519.75  | 77,416.90  |
| 740  | Mid Potomac       | Potomac                 | Above     | 87.20                                       | 1.98    | 4,140.60 | 93.97   | 178.28 | 4.05    | 427.76                                | 4,406.08 | 9,548.36  | 176,943.71 |
| 750  | Lower Potomac     | Potomac                 | Above     | 0.38  | 0.09    | 402.92   | 94.65   | 22.38  | 5.26    | 65.37                                 | 425.68   | 951.33    | 27,417.31  |
| 750  | Upper Patapsco    | West Chesapeake         | Below     | 99.64                                       | 8.61    | 1,057.93 | 91.39   | -      | -       | 4.13                                  | 1,157.57 | 2,969.85  | 102,004.74 |
| 770  | Upper Choptank    | Upper Eastern Shore     | Below     | 0.46  | 0.18    | 230.96   | 92.85   | 17.34  | 6.97    | 22.31                                 | 248.75   | 580.69    | 9,863.98   |
| 780  | Upper Nanticoke   | Lower Eastern Shore     | Below     | 0.35  | 0.45    | 64.18    | 82.98   | 12.82  | 16.57   | -                                     | 77.34    | 212.44    | 4,378.74   |
| 800  | Coast 1a          | Upper Eastern Shore     | Below     | 29.89                                       | 11.74   | 223.05   | 87.62   | 1.63   | 0.64    | 4.74                                  | 254.36   | 549.77    | 14,383.65  |
| 810  | Coast 1b          | Upper Eastern Shore     | Below     | -   | -       | 291.08   | 97.98   | 6.00   | 2.02    | 1.03                                  | 297.08   | 779.10    | 8,748.02   |

Table 10

HOUSING UNITS AND POPULATION PER HOUSEHOLD AS  
URBAN, RURAL AND FARM TYPES USING SEPTIC AND  
OTHER NON-SEWERED MEANS OF WASTE DISPOSAL:  
MODEL SEGMENT SUMMARIES

| CHESAPEAKE BAY PROGRAM<br>MODEL SEGMENTS: POPULATION |                |                         |           | c. POPULATION USING OTHER MEANS OF DISPOSAL |         |            |         |          |         | TOTAL POPULATION<br>USING OTHER MEANS |            |            |               |
|--|----------------|-------------------------|-----------|---|---------|------------|---------|----------|---------|---------------------------------------|------------|------------|---------------|
| Mod Seg  | Name           | Sub-basin               | Fall Line | AS:   |         |            |         |          |         | MIN                                   | MEAN       | MAX        |               |
|  |                |                         |           | URBAN                                       | % Total | RURAL      | % Total | FARM     | % Total |                                       |            |            |               |
| 820  | Coast 1c       | Upper Eastern Shore     | Below     | -   | -       | 192.29     | 99.89   | 0.22     | 0.11    | -                                     | 192.51     | 460.32     | 13,836.       |
| 830  | Coast 1d       | Upper Eastern Shore     | Below     | 30.96                                       | 16.33   | 156.16     | 82.35   | 2.51     | 1.33    | -                                     | 189.63     | 637.30     | 21,523.       |
| 840  | Coast 1e       | Upper Eastern Shore     | Below     | 0.18  | 0.03    | 585.87     | 95.52   | 27.28    | 4.45    | -                                     | 183.65     | 436.95     | 40,923.       |
| 850  | Coast 6a       | West Chesapeake         | Below     | 17.21                                       | 9.37    | 166.45     | 90.63   | -        | -       | 35.22                                 | 613.33     | 1,256.84   | 10,366.       |
| 860  | Coast 6b       | West Chesapeake         | Below     | 1,557.05                                    | 99.21   | 28.23      | 0.79    | -        | -       | 13.63                                 | 183.65     | 436.95     | 40,923.       |
| 870  | Coast 6c       | West Chesapeake         | Below     | 141.09                                      | 84.12   | 26.45      | 15.77   | -        | -       | 131.64                                | 3,585.29   | 8,721.54   | 492,389.      |
| 880  | Coast 5        | Patuxent/Mid Chesapeake | Below     | 435.25                                      | 41.39   | 543.37     | 51.67   | 73.01    | 6.94    | -                                     | 167.72     | 500.84     | 50,140.       |
| 890  | Potomac 1      | Potomac                 | Below     | 2,432.72                                    | 99.99   | 0.21       | 0.01    | 0.01     | 0.00    | 37.81                                 | 1,051.62   | 2,718.44   | 105,464.      |
| 900  | Potomac 2      | Potomac                 | Below     | 2,184.32                                    | 99.01   | 21.93      | 0.99    | -        | -       | 100.41                                | 2,432.94   | 5,973.36   | 316,298.      |
| 910  | Potomac 3      | Potomac                 | Below     | 1,572.50                                    | 74.76   | 526.05     | 25.01   | 4.78     | 0.23    | 97.53                                 | 2,206.26   | 5,325.03   | 824,933.      |
| 920  | Potomac 4      | Potomac                 | Below     | 168.94                                      | 4.17    | 3,283.56   | 81.05   | 599.00   | 14.78   | 50.68                                 | 2,103.33   | 5,221.82   | 339,733.      |
| 930  | Coast 8a       | Rappahannock            | Below     | -   | -       | 182.92     | 90.87   | 18.39    | 9.13    | 836.83                                | 4,053.30   | 8,114.25   | 109,840.      |
| 940  | Coast 8b       | Rappahannock            | Below     | 6.15  | 0.47    | 1,241.27   | 94.28   | 69.19    | 5.26    | 0.02                                  | 201.31     | 489.76     | 4,010.9       |
| 950  | Coast 8c       | Rappahannock            | Below     | 413.09                                      | 83.87   | 76.39      | 15.51   | 3.04     | 0.62    | 162.70                                | 1,316.61   | 2,724.58   | 27,292.3      |
| 960  | Coast 9        | James                   | Below     | 1,875.14                                    | 99.93   | 0.70       | 0.04    | 0.58     | 0.03    | -                                     | 492.53     | 1,280.97   | 154,773.3     |
| 970  | Potomac 5      | Potomac                 | Below     | 21.16                                       | 19.69   | 86.13      | 80.13   | 0.20     | 0.18    | 20.41                                 | 1,876.42   | 5,209.47   | 636,715.3     |
| 980  | Potomac 6      | Potomac                 | Below     | 37.73                                       | 1.98    | 1,700.24   | 89.11   | 170.15   | 8.92    | -                                     | 107.48     | 321.73     | 31,804.31     |
| 990  | Coast 12       | Patuxent/Mid Chesapeake | Below     | -   | -       | 71.16      | 80.23   | 17.53    | 19.77   | 253.74                                | 1,908.12   | 4,239.85   | 69,833.66     |
|  | CHESAPEAKE BAY |                         |           | 65.53                                       | 25.93   | 178.75     | 70.74   | 8.40     | 3.33    | -                                     | 88.70      | 205.18     | 4,384.37      |
|  | JAMES RIVER    |                         |           | 22.56                                       | 56.80   | 17.06      | 42.95   | 0.10     | 0.24    | 11.99                                 | 252.70     | 642.26     | 21,877.99     |
|  | PATUXENT RIVER |                         |           | 2.49  | 14.87   | 12.84      | 76.77   | 1.40     | 8.35    | 5.15                                  | 39.72      | 93.88      | 7,989.46      |
|  | POTOMAC RIVER  |                         |           | 37.86                                       | 39.88   | 50.11      | 52.79   | 6.96     | 7.33    | 1.56                                  | 16.72      | 38.10      | 566.25        |
|  | RAPPAHANNOCK   |                         |           | 0.88  | 2.77    | 29.25      | 91.70   | 1.76     | 5.52    | 10.67                                 | 94.93      | 227.09     | 5,973.31      |
|  | YORK RIVER     |                         |           | 8.22  | 28.05   | 20.32      | 69.32   | 0.77     | 2.63    | 1.47                                  | 31.90      | 79.03      | 1,024.57      |
|  | Grand Total    |                         |           | 37,125.02                                   | 21.77   | 124,247.42 | 72.85   | 9,181.98 | 5.38    | 23,776.75                             | 170,355.63 | 373,625.23 | 13,787,782.13 |

Table 11. STATE SUMMARIES FOR NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL

| STATE                      | A. NITROGEN LOADED AND DELIVERED TO THE BAY FROM SEPTIC AND OTHER NON-SEWERED TREATMENT |            |            |               |           |            |           |         |           |                       |            |            |
|----------------------------|---|------------|------------|---------------|-----------|------------|-----------|---------|-----------|-----------------------|------------|------------|
|                            | GROUND WATER  |            |            | SURFACE WATER |           |            | BAY WATER |         |           | TOTAL NITROGEN LOADED |            |            |
|                            | MIN   | MEAN       | MAX        | MIN           | MEAN      | MAX        | MIN       | MEAN    | MAX       | MIN                   | MEAN       | MAX        |
| DELAWARE Total             | 247,521   | 341,484    | 459,823    | 81,348        | 111,231   | 148,879    | -         | -       | -         | -                     | -          | -          |
| DISTRICT OF COLUMBIA Total | 439   | 34,261     | 107,285    | 188           | 11,717    | 38,233     | 5,848     | 8,027   | 10,874    | 334,516               | 483,722    | 618,976    |
| MARYLAND Total             | 3,784,260   | 5,794,863  | 8,479,395  | 1,201,890     | 1,939,968 | 2,830,862  | 305       | 2,848   | 7,289     | 903                   | 48,828     | 180,898    |
| NEW YORK Total             | 1,388,215   | 1,944,911  | 2,868,555  | 849,913       | 909,814   | 1,235,400  | 388,455   | 588,842 | 833,440   | 5,484,284             | 8,345,674  | 12,143,897 |
| PENNSYLVANIA Total         | 5,588,525   | 8,008,800  | 11,182,650 | 2,107,891     | 3,115,953 | 4,285,402  | -         | -       | -         | 2,018,128             | 2,853,526  | 3,901,655  |
| VIRGINIA Total             | 4,359,087   | 6,831,911  | 10,085,403 | 1,518,278     | 2,358,396 | 3,458,828  | -         | -       | -         | 7,794,418             | 11,185,843 | 15,418,061 |
| WEST VIRGINIA Total        | 479,478   | 731,289    | 1,048,803  | 191,113       | 288,384   | 410,691    | 238,709   | 368,407 | 541,284   | 8,116,085             | 9,858,714  | 14,088,515 |
| Grand Total                | 15,825,546  | 23,754,370 | 34,008,674 | 5,940,280     | 8,753,274 | 12,374,985 | 643,117   | 965,924 | 1,382,868 | 22,408,822            | 33,473,587 | 47,777,565 |

**Table 11. STATE SUMMARIES FOR NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL.**

| STATE                      | B. NITROGEN LOADED (LBS) |            |            |                            |            |            |
|----------------------------|--------------------------|------------|------------|----------------------------|------------|------------|
|                            | TOTAL NITROGEN LOADED    |            |            | NITROGEN TRANSPORTED (LBS) |            |            |
|                            | MIN                      | MEAN       | MAX        | MIN                        | MEAN       | MAX        |
| DELAWARE Total             | 334,818                  | 483,722    | 818,978    | 334,749                    | 483,722    | 818,978    |
| DISTRICT OF COLUMBIA Total | 903                      | 48,826     | 180,808    | 903                        | 48,826     | 180,808    |
| MARYLAND Total             | 8,484,284                | 8,348,674  | 12,143,897 | 1,145,981                  | 7,845,057  | 11,438,324 |
| NEW YORK Total             | 2,018,128                | 2,883,528  | 3,901,988  | 1,180,888                  | 1,844,381  | 2,282,848  |
| PENNSYLVANIA Total         | 7,784,418                | 11,188,843 | 15,418,051 | 1,108,317                  | 8,704,274  | 12,141,840 |
| VIRGINIA Total             | 8,118,088                | 9,888,714  | 14,088,818 | 1,181,049                  | 8,138,343  | 12,059,108 |
| WEST VIRGINIA Total        | 870,882                  | 1,019,884  | 1,488,883  | 818,481                    | 798,298    | 1,123,812  |
| Grand Total                | 22,408,822               | 33,473,887 | 47,777,888 | 11,481,119                 | 27,720,899 | 39,783,814 |

Table 11. STATE SUMMARIES FOR NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL

| STATE                      | C. POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING SEPTIC FIELDS TO |           |           |               |           |           |           |         |         | TOTAL 7C  |
|----------------------------|--|-----------|-----------|---------------|-----------|-----------|-----------|---------|---------|-----------|
|                            | GROUND WATER   |           |           | SURFACE WATER |           |           | BAY WATER |         |         |           |
|                            | MIN  | MEAN      | MAX       | MIN           | MEAN      | MAX       | MIN       | MEAN    | MAX     |           |
| DELAWARE Total             | 1,508  | 10,495    | 17,086    | 1,821         | 3,498     | 5,735     | 131       | 402     | 742     | 14,392    |
| DISTRICT OF COLUMBIA Total | -  | 8,839     | 31,589    | -             | 2,997     | 10,583    | -         | 737     | 2,513   | 12,572    |
| MARYLAND Total             | 734,864  | 1,393,865 | 2,331,031 | 234,028       | 443,054   | 739,640   | 135,132   | 204,763 | 298,120 | 2,041,502 |
| NEW YORK Total             | 104,513  | 179,868   | 288,198   | 55,911        | 93,778    | 147,728   | -         | -       | -       | 273,637   |
| PENNSYLVANIA Total         | 201,770  | 479,517   | 912,847   | 77,830        | 162,828   | 348,582   | -         | -       | -       | 852,343   |
| VIRGINIA Total             | 631,067  | 1,285,175 | 2,229,825 | 231,321       | 484,093   | 799,326   | 73,150    | 125,432 | 197,888 | 1,874,700 |
| WEST VIRGINIA Total        | 8,702  | 18,190    | 27,881    | 3,989         | 8,937     | 11,289    | -         | -       | -       | 23,127    |
| Grand Total                | 1,683,213  | 3,373,789 | 5,838,837 | 604,680       | 1,197,180 | 2,080,884 | 208,413   | 331,334 | 487,263 | 4,902,303 |

Table 11. STATE SUMMARIES FOR NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL

| STATE                      | D. POUNDS OF NITROGEN LOADED BY RURAL NONFARM POPULATIONS USING SEPTIC TO: |            |            |               |           |           |           |         |         | TOTAL TD   |
|----------------------------|--|------------|------------|---------------|-----------|-----------|-----------|---------|---------|------------|
|                            | GROUND WATER   |            |            | SURFACE WATER |           |           | BAY WATER |         |         |            |
|                            | MIN  | MEAN       | MAX        | MIN           | MEAN      | MAX       | MIN       | MEAN    | MAX     |            |
| DELAWARE Total             | 239,660  | 305,810    | 378,019    | 78,833        | 98,544    | 119,797   | 5,501     | 7,180   | 9,043   | 411,334    |
| DISTRICT OF COLUMBIA Total |  |            |            |               |           |           |           |         |         |            |
| MARYLAND Total             |  |            |            |               |           |           |           |         |         |            |
| NEW YORK Total             | 3,015,080  | 3,974,303  | 5,021,778  | 1,058,219     | 1,370,891 | 1,714,035 | -         | -       | -       | 5,696,452  |
| PENNSYLVANIA Total         | 1,256,868  | 1,646,188  | 2,062,025  | 500,750       | 781,103   | 942,951   | 261,681   | 351,258 | 450,868 | 2,407,288  |
| VIRGINIA Total             | 6,201,805  | 6,854,343  | 8,678,817  | 2,048,287     | 2,852,854 | 3,316,203 | -         | -       | -       | 9,508,997  |
| WEST VIRGINIA Total        | 3,663,838  | 4,818,057  | 6,303,381  | 1,284,740     | 1,674,222 | 2,125,855 | 163,695   | 220,331 | 282,811 | 8,812,610  |
| Grand Total                | 481,138  | 635,372    | 850,850    | 182,778       | 248,082   | 321,347   | -         | -       | -       | 883,454    |
|                            | 13,838,285   | 18,333,872 | 23,273,870 | 5,222,407     | 6,805,498 | 8,540,289 | 431,177   | 578,769 | 742,824 | 25,718,137 |

Table 11. STATE SUMMARIES FOR NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL.

| STATE                      | E. POUNDS OF NITROGEN LOADED BY FARM POPULATIONS USING SEPTIC TO: |         |           |               |         |         |           |        |        | TOTAL 7E  |
|----------------------------|---|---------|-----------|---------------|---------|---------|-----------|--------|--------|-----------|
|                            | GROUND WATER  |         |           | SURFACE WATER |         |         | BAY WATER |        |        |           |
|                            | MIN   | MEAN    | MAX       | MIN           | MEAN    | MAX     | MIN       | MEAN   | MAX    |           |
| DELAWARE Total             | 2,550   | 17,235  | 37,100    | 866           | 5,618   | 11,908  | 8         | 315    | 739    | 23,168    |
| DISTRICT OF COLUMBIA Total | -   | -       | -         | -             | -       | -       | -         | -      | -      | -         |
| MARYLAND Total             | 21,613  | 182,028 | 412,738   | 7,511         | 61,857  | 138,836 | 876       | 11,367 | 27,676 | 255,252   |
| NEW YORK Total             | 5,150   | 71,785  | 172,483   | 2,426         | 33,117  | 78,603  | -         | -      | -      | 104,912   |
| PENNSYLVANIA Total         | 124,058   | 424,218 | 827,831   | 46,647        | 158,040 | 305,888 | -         | -      | -      | 582,258   |
| VIRGINIA Total             | 23,731  | 244,732 | 571,458   | 8,294         | 82,901  | 181,551 | 68        | 5,654  | 15,057 | 333,287   |
| WEST VIRGINIA Total        | 1,909   | 29,527  | 72,136    | 862           | 12,051  | 28,905  | -         | -      | -      | 41,578    |
| Grand Total                | 179,220   | 969,535 | 2,093,846 | 69,610        | 353,584 | 755,771 | 951       | 17,337 | 43,472 | 1,340,455 |

**Table 11. STATE SUMMARIES FOR NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL**

| STATE                      | F. POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |                |                |               |               |                |            |               |               | TOTAL T#       |
|----------------------------|---|----------------|----------------|---------------|---------------|----------------|------------|---------------|---------------|----------------|
|                            | GROUND WATER  |                |                | SURFACE WATER |               |                | BAY WATER  |               |               |                |
|                            | MIN   | MEAN           | MAX            | MIN           | MEAN          | MAX            | MIN        | MEAN          | MAX           |                |
| DELAWARE Total             | -   | 886            | 1,742          | -             | 228           | 578            | -          | 1             | 7             | 893            |
| DISTRICT OF COLUMBIA Total | 439   | 25,422         | 75,718         | 156           | 6,720         | 25,650         | 308        | 1,911         | 4,776         | 38,053         |
| MARYLAND Total             | 3,975   | 116,202        | 345,358        | 1,297         | 38,013        | 111,812        | 52         | 7,324         | 23,321        | 161,540        |
| NEW YORK Total             | 52  | 2,328          | 7,753          | 28            | 1,148         | 3,808          | -          | -             | -             | 3,477          |
| PENNSYLVANIA Total         | 2,276   | 21,915         | 82,139         | 816           | 10,386        | 31,900         | -          | -             | -             | 37,301         |
| VIRGINIA Total             | 2,518   | 61,846         | 191,181        | 1,031         | 24,019        | 73,558         | 213        | 3,328         | 10,094        | 88,903         |
| WEST VIRGINIA Total        | -   | 728            | 2,195          | -             | 325           | 1,022          | -          | -             | -             | 1,053          |
| <b>Grand Total</b>         | <b>9,259</b>  | <b>231,908</b> | <b>708,084</b> | <b>3,321</b>  | <b>82,837</b> | <b>248,337</b> | <b>573</b> | <b>12,584</b> | <b>38,198</b> | <b>329,310</b> |

Table 11. STATE SUMMARIES FOR NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL

| STATE                      | 3. POUNDS OF NITROGEN LOADED BY RURAL NONFARM POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |         |           |               |         |         |           |        |        | TOTAL 7G  |
|----------------------------|---|---------|-----------|---------------|---------|---------|-----------|--------|--------|-----------|
|                            | GROUNDWATER   |         |           | SURFACE WATER |         |         | BAY WATER |        |        |           |
|                            | MIN   | MEAN    | MAX       | MIN           | MEAN    | MAX     | MIN       | MEAN   | MAX    |           |
| DELAWARE Total             | 705   | 9,076   | 21,327    | 227           | 2,904   | 6,763   | 5         | 116    | 282    | 12,098    |
| DISTRICT OF COLUMBIA Total | -   | -       | -         | -             | -       | -       | -         | -      | -      | -         |
| MARYLAND Total             | 6,787   | 124,323 | 334,107   | 2,481         | 43,208  | 114,590 | 713       | 11,452 | 31,875 | 178,983   |
| NEW YORK Total             | 1,633   | 38,502  | 109,794   | 798           | 18,002  | 50,544  | -         | -      | -      | 58,503    |
| PENNSYLVANIA Total         | 54,514  | 281,451 | 570,880   | 22,818        | 103,412 | 224,758 | -         | -      | -      | 384,863   |
| VIRGINIA Total             | 38,847  | 308,205 | 708,222   | 12,893        | 105,510 | 241,968 | 1,284     | 12,714 | 31,611 | 424,429   |
| WEST VIRGINIA Total        | 7,732   | 45,887  | 100,203   | 3,804         | 19,385  | 41,348  | -         | -      | -      | 85,052    |
| Grand Total                | 108,218   | 785,243 | 1,854,533 | 42,716        | 282,400 | 680,168 | 2,002     | 24,285 | 63,767 | 1,101,928 |

Table 11. STATE SUMMARIES FOR NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL

| STATE                      | H. POUNDS OF NITROGEN LOADED BY FARM POPULATIONS USING OTHER MEANS OF WASTE DISPOSAL TO: |        |         |               |        |        |           |       |       | TOTAL 7H | TOTAL NITROGEN (lbs) |
|----------------------------|--|--------|---------|---------------|--------|--------|-----------|-------|-------|----------|----------------------|
|                            | GROUND WATER   |        |         | SURFACE WATER |        |        | BAY WATER |       |       |          |                      |
|                            | MIN  | MEAN   | MAX     | MIN           | MEAN   | MAX    | MIN       | MEAN  | MAX   |          |                      |
| DELAWARE Total             | -  | 1,383  | 5,849   | -             | 444    | 1,799  | -         | 10    | 61    | 1,837    | 463,722              |
| DISTRICT OF COLUMBIA Total | -  | -      | -       | -             | -      | -      | -         | -     | -     | -        | 48,626               |
| MARYLAND Total             | 70   | 8,322  | 34,383  | 25            | 2,946  | 11,948 | -         | 377   | 3,478 | 11,941   | 8,345,674            |
| NEW YORK Total             | -  | 5,211  | 25,403  | -             | 2,468  | 11,766 | -         | -     | -     | 7,677    | 2,853,525            |
| PENNSYLVANIA Total         | 1,302  | 23,248 | 81,038  | 494           | 8,634  | 20,983 | -         | -     | -     | 31,881   | 11,185,843           |
| VIRGINIA Total             | -  | 16,066 | 80,356  | -             | 5,852  | 27,469 | -         | 948   | 3,822 | 22,896   | 9,556,714            |
| WEST VIRGINIA Total        | -  | 3,785  | 15,897  | -             | 1,635  | 8,601  | -         | -     | -     | 5,391    | 1,010,684            |
| Grand Total                | 1,372  | 58,023 | 242,524 | 519           | 21,777 | 89,567 | -         | 1,835 | 7,362 | 81,434   | 33,473,567           |

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                 | a. NITROGEN LOADED AND DELIVERED TO THE BAY FROM SEPTIC AND OTHER NON-SEWERED TREATMENT |           |           |               |           |           |           |           |           |                       |           |             |
|--|-------|-----------------|---|-----------|-----------|---------------|-----------|-----------|-----------|-----------|-----------|-----------------------|-----------|-------------|
|  |       |                 | TOTAL NITROGEN (LBS) LOADED TO:   |           |           |               |           |           |           |           |           | TOTAL NITROGEN LOADED |           |             |
|  |       |                 | GROUND WATER  |           |           | SURFACE WATER |           |           | BAY WATER |           |           |                       |           |             |
| STATE  | FIPS  | COUNTY          | MIN   | MEAN      | MAX       | MIN           | MEAN      | MAX       | MIN       | MEAN      | MAX       | MIN                   | MEAN      | MAX         |
| DELAWARE   | 10001 | KENT            | 72,125.8  | 96,409.1  | 124,789.9 | 25,337.4      | 33,623.5  | 43,051.6  | -         | -         | -         | 97,883.1              | 130,032.7 | 117,841.5   |
| DELAWARE   | 10003 | NEW CASTLE      | 18,934.2  | 25,260.3  | 32,461.9  | 6,651.2       | 8,714.5   | 11,037.1  | -         | -         | -         | 25,844.8              | 34,429.1  | 44,874.4    |
| DELAWARE   | 10005 | SUSSEX          | 156,461.4   | 222,794.4 | 302,370.8 | 49,139.5      | 68,892.9  | 92,478.7  | 5,286.3   | 7,571.8   | 10,318.1  | 210,887.3             | 291,260.1 | 416,059.6   |
| DISTRICT OF COLUMBIA   | 11001 | WASHINGTON      | 439.5   | 34,261.2  | 107,284.6 | 136.1         | 11,716.7  | 36,232.7  | 307.7     | 2,640.0   | 7,288.8   | 903.3                 | 41,625.8  | 138,886.1   |
| MARYLAND   | 24001 | ALLEGANY        | 38,643.4  | 79,069.6  | 137,194.8 | 17,726.8      | 35,214.7  | 60,829.9  | -         | -         | -         | 56,370.2              | 114,283.7 | 117,224.7   |
| MARYLAND   | 24003 | ANNE ARUNDEL    | 411,139.3   | 619,753.4 | 888,991.0 | 117,868.8     | 174,878.7 | 248,272.2 | 126,319.6 | 186,322.8 | 263,892.2 | 653,327.8             | 980,954.8 | 1,411,155.4 |
| MARYLAND   | 24005 | BALTIMORE       | 365,356.0   | 537,456.4 | 823,081.0 | 127,914.1     | 190,818.7 | 276,885.6 | 21,839.0  | 30,070.7  | 62,947.6  | 515,311.1             | 786,346.3 | 1,112,916.1 |
| MARYLAND   | 24009 | CALVERT         | 191,786.9   | 261,485.0 | 343,181.2 | 71,404.2      | 95,754.3  | 124,235.9 | 35,411.2  | 48,566.1  | 64,127.2  | 298,674.3             | 401,748.4 | 511,746.2   |
| MARYLAND   | 24011 | CAROLINE        | 79,389.4  | 117,330.0 | 164,921.2 | 25,787.7      | 37,464.7  | 52,077.6  | 5,411.1   | 8,317.4   | 11,487.8  | 118,578.2             | 163,112.1 | 228,847.6   |
| MARYLAND   | 24013 | CARROLL         | 346,429.6   | 511,336.6 | 685,771.0 | 137,615.4     | 188,741.8 | 259,078.0 | -         | -         | -         | 504,045.0             | 700,080.3 | 915,835.0   |
| MARYLAND   | 24015 | CECIL           | 173,718.8   | 256,699.7 | 360,326.1 | 57,164.7      | 82,994.5  | 115,146.2 | 20,119.6  | 29,034.6  | 40,347.0  | 251,045.0             | 348,728.8 | 516,013.3   |
| MARYLAND   | 24017 | CHARLES         | 171,103.7   | 260,437.6 | 374,111.0 | 63,744.9      | 95,532.2  | 135,744.2 | 14,346.9  | 21,224.2  | 30,161.5  | 249,195.5             | 377,219.0 | 510,036.7   |
| MARYLAND   | 24019 | DORCHESTER      | 48,911.0  | 76,863.4  | 112,481.0 | 17,400.5      | 26,877.7  | 39,199.6  | 15,613.6  | 23,337.9  | 33,331.1  | 81,975.2              | 127,879.0 | 175,911.7   |
| MARYLAND   | 24021 | FREDERICK       | 329,482.0   | 479,839.4 | 669,361.4 | 105,384.9     | 151,056.6 | 208,341.6 | -         | -         | -         | 434,786.9             | 630,918.0 | 877,664.0   |
| MARYLAND   | 24023 | GARRETT         | 19,147.7  | 28,176.7  | 39,581.7  | 6,811.8       | 9,902.0   | 13,786.0  | -         | -         | -         | 23,967.5              | 34,878.7  | 49,373.7    |
| MARYLAND   | 24025 | HARFORD         | 338,191.6   | 481,253.0 | 656,741.5 | 110,481.3     | 153,993.0 | 207,836.6 | 1,638.0   | 4,486.2   | 8,723.2   | 450,312.9             | 639,732.3 | 872,562.3   |
| MARYLAND   | 24027 | HOWARD          | 149,728.9   | 229,428.4 | 335,534.7 | 54,091.6      | 80,918.2  | 116,375.0 | -         | -         | -         | 203,822.5             | 310,347.6 | 411,909.7   |
| MARYLAND   | 24029 | KENT            | 31,288.3  | 53,862.7  | 84,222.7  | 9,641.5       | 16,373.0  | 25,337.9  | 7,715.1   | 13,052.9  | 20,464.3  | 48,646.9              | 81,328.7  | 130,047.0   |
| MARYLAND   | 24031 | MONTGOMERY      | 193,470.3   | 331,444.4 | 526,914.9 | 71,131.5      | 119,042.5 | 186,236.0 | 16.9      | 341.8     | 1,165.5   | 264,645.7             | 450,848.6 | 716,314.4   |
| MARYLAND   | 24033 | PRINCE GEORGE'S | 71,370.1  | 102,602.3 | 139,071.3 | 25,981.1      | 41,772.2  | 62,403.2  | 2,119.1   | 4,594.4   | 7,547.7   | 99,553.4              | 151,969.0 | 215,323.1   |
| MARYLAND   | 24035 | QUEEN ANNE'S    | 81,740.3  | 117,867.3 | 162,161.5 | 26,490.4      | 37,531.9  | 51,003.0  | 43,646.4  | 61,069.4  | 82,008.6  | 151,897.1             | 214,469.1 | 285,181.1   |
| MARYLAND   | 24037 | SAINT MARY'S    | 199,736.7   | 285,217.7 | 397,211.1 | 72,177.9      | 102,513.3 | 139,798.4 | 53,513.7  | 73,784.0  | 98,782.9  | 325,494.4             | 464,547.0 | 615,704.5   |
| MARYLAND   | 24039 | SOMERSET        | 44,413.8  | 66,032.3  | 93,968.8  | 17,244.0      | 25,163.3  | 35,344.6  | 10,930.7  | 16,747.7  | 24,093.9  | 73,608.5              | 107,967.5 | 151,828.3   |
| MARYLAND   | 24041 | TALBOT          | 54,048.5  | 79,095.3  | 111,681.2 | 17,361.6      | 24,891.7  | 34,634.4  | 31,286.3  | 43,937.3  | 60,293.6  | 102,617.3             | 147,944.5 | 206,598.2   |
| MARYLAND   | 24043 | WASHINGTON      | 217,447.8   | 323,813.3 | 457,721.8 | 72,511.8      | 106,066.7 | 148,011.5 | -         | -         | -         | 289,967.7             | 429,874.0 | 645,804.3   |
| MARYLAND   | 24045 | WICOMICO        | 173,369.5   | 247,526.2 | 339,371.5 | 61,777.8      | 86,832.0  | 117,815.2 | 7,848.1   | 11,815.2  | 17,036.4  | 243,015.4             | 346,208.3 | 474,151.1   |
| MARYLAND   | 24047 | WORCESTER       | 30,068.2  | 44,943.3  | 63,911.7  | 12,429.4      | 18,474.1  | 26,116.4  | 378.0     | 456.2     | 613.2     | 42,875.5              | 61,913.5  | 86,741.2    |
| MARYLAND   | 24510 | BALTIMORE CITY  | 4,173.7   | 104,271.3 | 290,741.6 | 1,376.4       | 34,095.6  | 93,816.3  | -         | 1,603.1   | 5,363.9   | 5,550.1               | 131,974.2 | 349,849.8   |
| NEW YORK   | 36003 | ALLEGANY        | 11,009.3  | 15,631.3  | 21,511.8  | 5,121.7       | 7,137.2   | 9,715.3   | -         | -         | -         | 16,133.0              | 22,906.5  | 31,309.1    |
| NEW YORK   | 36007 | BROOME          | 265,779.0   | 381,255.4 | 526,179.9 | 138,191.1     | 193,316.9 | 266,833.4 | -         | -         | -         | 403,973.1             | 576,596.3 | 793,064.4   |
| NEW YORK   | 36011 | CAYUGA          | 228.9   | 292.9     | 364.9     | 117.3         | 147.6     | 179.8     | -         | -         | -         | 346.2                 | 440.5     | 548.7       |
| NEW YORK   | 36015 | CHENANGO        | 140,473.2   | 200,471.4 | 276,421.6 | 65,401.6      | 92,271.0  | 126,513.8 | -         | -         | -         | 203,874.9             | 292,747.4 | 412,982.4   |
| NEW YORK   | 36017 | CHENANGO        | 137,471.7   | 223,328.1 | 310,751.1 | 73,901.1      | 104,006.6 | 141,818.2 | -         | -         | -         | 231,773.8             | 329,334.6 | 452,549.2   |
| NEW YORK   | 36023 | CORTLAND        | 83,102.1  | 121,373.5 | 170,561.9 | 39,346.8      | 56,781.7  | 79,235.8  | -         | -         | -         | 122,448.9             | 178,162.2 | 249,849.7   |
| NEW YORK   | 36025 | DELAWARE        | 40,818.5  | 55,733.8  | 74,571.9  | 19,838.9      | 26,591.8  | 34,920.1  | -         | -         | -         | 66,657.4              | 82,313.5  | 110,497.1   |
| NEW YORK   | 36043 | HERKIMER        | 20,300.6  | 26,639.7  | 33,731.5  | 8,172.9       | 10,450.4  | 13,093.1  | -         | -         | -         | 26,673.5              | 37,090.2  | 49,832.6    |
| NEW YORK   | 36051 | LIVINGSTON      | 1,680.7   | 2,216.3   | 2,884.4   | 800.7         | 1,031.6   | 1,316.5   | -         | -         | -         | 2,481.4               | 3,254.9   | 4,280.9     |
| NEW YORK   | 36053 | MADISON         | 37,388.8  | 79,279.6  | 105,637.7 | 26,631.4      | 36,141.0  | 47,569.3  | -         | -         | -         | 84,013.5              | 115,428.7 | 153,207.0   |
| NEW YORK   | 36065 | ONEIDA EAST     | 10,892.3  | 14,821.5  | 19,606.1  | 4,588.4       | 6,141.8   | 8,037.6   | -         | -         | -         | 13,400.9              | 20,964.3  | 27,643.7    |
| NEW YORK   | 36067 | ONONDAGA        | 9,398.8   | 13,761.6  | 18,941.9  | 3,893.6       | 5,391.5   | 7,314.1   | -         | -         | -         | 13,452.4              | 19,160.1  | 26,256.1    |
| NEW YORK   | 36069 | ONTARIO         | 352.3   | 709.1     | 975.2     | 201.3         | 308.0     | 372.4     | -         | -         | -         | 793.7                 | 1,013.9   | 1,248.6     |
| NEW YORK   | 36077 | OTSEGO          | 174,466.3   | 241,271.3 | 324,631.3 | 77,975.2      | 106,131.7 | 141,337.7 | -         | -         | -         | 232,441.7             | 347,424.0 | 475,971.0   |
| NEW YORK   | 36093 | SCHENARIE       | 4,554.3   | 6,473.8   | 9,028.4   | 2,068.6       | 2,848.2   | 3,944.1   | -         | -         | -         | 6422.9                | 7,358.1   | 10,987.4    |
| NEW YORK   | 36097 | SCHUYLER        | 17,949.3  | 24,900.1  | 33,507.6  | 8,398.2       | 11,431.4  | 15,241.1  | -         | -         | -         | 26343.5               | 34,337.5  | 46,751.6    |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCR-CHESAPEAKE, Inc. |           |                | a. NITROGEN LOADED AND DELIVERED TO THE BAY FROM SEPTIC AND OTHER NON-SEWERED TREATMENT |           |             |               |           |           |           |      |     |                       |             |             |
|---|-----------|----------------|---|-----------|-------------|---------------|-----------|-----------|-----------|------|-----|-----------------------|-------------|-------------|
|   |           |                | TOTAL NITROGEN (LBS) LOADED TO:   |           |             |               |           |           |           |      |     | TOTAL NITROGEN LOADED |             |             |
|   |           |                | GROUND WATER  |           |             | SURFACE WATER |           |           | BAY WATER |      |     |                       |             |             |
| STATE   | FIPS      | COUNTY         | MIN   | MEAN      | MAX         | MIN           | MEAN      | MAX       | MIN       | MEAN | MAX | MIN                   | MEAN        | MAX         |
| NEW YORK  | 3601      | STEVENS        | 14,845.7  | 290,431.0 | 410,073.4   | 92,750.8      | 134,816.0 | 188,388.1 | -         | -    | -   | -                     | -           | -           |
| NEW YORK  | 3607      | TIOGA          | 11,003.9  | 210,891.8 | 285,104.4   | 70,983.8      | 97,229.1  | 129,605.1 | -         | -    | -   | 289,596.5             | 425,247.0   | 598,461.6   |
| NEW YORK  | 3609      | TOMPKINS       | 22,839.1  | 30,876.0  | 48,116.6    | 10,983.9      | 14,576.8  | 18,694.1  | -         | -    | -   | 221,987.7             | 308,120.9   | 414,789.3   |
| NEW YORK  | 3623      | YATES          | 1,668.4   | 1,502.5   | 2,043.9     | 541.2         | 748.8     | 1,007.3   | -         | -    | -   | 33,823.0              | 43,452.7    | 58,810.7    |
| PENNSYLVANIA  | C001      | ADAMS          | 19,459.9  | 181,706.0 | 379,645.5   | 62,374.8      | 84,446.2  | 115,123.4 | -         | -    | -   | 1,409.6               | 2,251.3     | 3,031.2     |
| PENNSYLVANIA  | 0009      | BEDFORD        | 173,227.9   | 124,843.6 | 307,573.1   | 70,001.3      | 93,111.4  | 119,596.9 | -         | -    | -   | 261,734.7             | 368,152.2   | 494,808.9   |
| PENNSYLVANIA  | 0201      | BERKS          | 33,537.5  | 71,159.0  | 92,174.0    | 20,198.9      | 26,354.6  | 33,478.8  | -         | -    | -   | 245,229.2             | 329,954.9   | 427,170.0   |
| PENNSYLVANIA  | 12,013.00 | BLAIR          | 133,470.7   | 124,784.6 | 349,539.3   | 60,396.9      | 91,906.5  | 134,359.3 | -         | -    | -   | 73,734.4              | 97,515.6    | 125,852.7   |
| PENNSYLVANIA  | 0203      | BRADFORD       | 115,425.7   | 153,809.2 | 334,273.6   | 90,476.1      | 121,304.3 | 157,335.0 | -         | -    | -   | 213,847.6             | 328,693.1   | 483,898.6   |
| PENNSYLVANIA  | 0201      | CASBERIA       | 70,255.5  | 99,805.8  | 135,031.2   | 27,905.1      | 38,947.3  | 52,053.6  | -         | -    | -   | 275,901.8             | 375,113.5   | 491,608.6   |
| PENNSYLVANIA  | 0203      | CAMERON        | 11,965.3  | 19,262.8  | 28,441.8    | 4,194.8       | 6,639.9   | 9,687.2   | -         | -    | -   | 98,160.6              | 138,753.1   | 187,184.8   |
| PENNSYLVANIA  | 0203      | CARBON         | 5.9   | 7.7       | 9.7         | 2.6           | 3.3       | 4.1       | -         | -    | -   | 16,160.2              | 23,902.7    | 38,129.0    |
| PENNSYLVANIA  | 0207      | CENTRE         | 143,090.0   | 238,933.1 | 335,122.7   | 61,480.2      | 88,566.1  | 122,499.3 | -         | -    | -   | 8.5                   | 11.0        | 13.9        |
| PENNSYLVANIA  | 0209      | CHESTER        | 102,213.8   | 134,951.5 | 171,918.7   | 34,831.6      | 45,264.5  | 57,051.1  | -         | -    | -   | 224,170.2             | 327,499.1   | 457,421.9   |
| PENNSYLVANIA  | 0303      | CLEARFIELD     | 173,546.2   | 244,896.9 | 329,636.7   | 64,854.9      | 92,906.3  | 123,779.0 | -         | -    | -   | 137,045.4             | 180,216.0   | 238,969.7   |
| PENNSYLVANIA  | 0305      | CLINTON        | 37,572.5  | 83,843.6  | 120,434.8   | 23,822.2      | 34,974.9  | 48,430.0  | -         | -    | -   | 240,401.1             | 337,803.2   | 453,415.7   |
| PENNSYLVANIA  | 0307      | COLUMBIA       | 140,616.4   | 225,463.1 | 292,819.7   | 68,355.0      | 90,310.2  | 116,157.2 | -         | -    | -   | 81,395.7              | 120,818.5   | 169,064.8   |
| PENNSYLVANIA  | 0301      | CUMBERLAND     | 228,432.3   | 355,603.0 | 504,832.9   | 84,406.3      | 126,457.6 | 177,145.3 | -         | -    | -   | 234,371.4             | 315,775.3   | 408,977.0   |
| PENNSYLVANIA  | 0303      | DAUPHIN        | 225,088.8   | 340,723.9 | 497,547.7   | 79,582.8      | 121,117.2 | 176,390.1 | -         | -    | -   | 325,038.6             | 482,068.6   | 681,978.2   |
| PENNSYLVANIA  | 0307      | ELK            | 21,162.3  | 31,877.1  | 43,396.6    | 8,090.5       | 11,424.1  | 15,423.7  | -         | -    | -   | 301,671.6             | 461,843.1   | 674,337.8   |
| PENNSYLVANIA  | 0305      | FRANKLIN       | 206,651.0   | 314,494.2 | 451,627.9   | 77,692.9      | 115,631.7 | 163,405.1 | -         | -    | -   | 30,252.8              | 43,301.3    | 59,020.3    |
| PENNSYLVANIA  | 0307      | FULTON         | 50,054.0  | 71,714.1  | 91,533.5    | 22,849.2      | 29,781.6  | 37,528.3  | -         | -    | -   | 284,345.0             | 430,125.9   | 515,033.0   |
| PENNSYLVANIA  | 0301      | HUNTINGDON     | 121,888.2   | 187,347.0 | 219,831.0   | 48,432.7      | 65,246.3  | 84,526.4  | -         | -    | -   | 76,903.2              | 101,495.8   | 129,061.8   |
| PENNSYLVANIA  | 0303      | INDIANA        | 1,464.4   | 20,339.9  | 27,176.4    | 5,775.9       | 7,984.2   | 10,541.9  | -         | -    | -   | 171,520.9             | 232,613.4   | 303,517.4   |
| PENNSYLVANIA  | 0305      | JEFFERSON      | 17.0  | 23.4      | 30.8        | 6.0           | 8.1       | 10.6      | -         | -    | -   | 20,240.2              | 28,324.1    | 37,710.3    |
| PENNSYLVANIA  | 0307      | JUNIATA        | 7,470.7   | 19,935.7  | 131,748.0   | 29,988.4      | 40,696.7  | 53,060.6  | -         | -    | -   | 23.0                  | 31.6        | 41.3        |
| PENNSYLVANIA  | 0309      | LACKAWANNA     | 104,762.8   | 134,028.2 | 229,038.7   | 55,370.9      | 83,526.5  | 123,265.6 | -         | -    | -   | 102,459.1             | 140,632.4   | 184,888.5   |
| PENNSYLVANIA  | 0371      | LANCASTER      | 641,849.9   | 977,615.0 | 1,398,387.0 | 219,130.9     | 324,314.6 | 457,733.1 | -         | -    | -   | 156,133.7             | 237,554.8   | 352,304.2   |
| PENNSYLVANIA  | 0375      | LEBANON        | 151,272.4   | 230,129.6 | 318,411.8   | 59,365.9      | 84,093.8  | 114,695.2 | -         | -    | -   | 864,948.8             | 1,301,929.7 | 1,854,120.1 |
| PENNSYLVANIA  | 0379      | LUZERNE        | 24,058.9  | 374,354.4 | 552,159.9   | 120,177.8     | 80,543.2  | 261,250.9 | -         | -    | -   | 218,631.3             | 314,223.4   | 433,107.0   |
| PENNSYLVANIA  | 0201      | LYCOMING       | 247,186.8   | 341,043.4 | 453,283.9   | 102,690.1     | 139,515.6 | 183,617.9 | -         | -    | -   | 364,226.7             | 556,897.7   | 813,410.8   |
| PENNSYLVANIA  | 0203      | MCKEAN         | 972.2   | 1,283.0   | 1,635.4     | 333.2         | 433.4     | 547.2     | -         | -    | -   | 349,876.9             | 480,559.0   | 636,901.9   |
| PENNSYLVANIA  | 0207      | MIFFLIN        | 84,258.7  | 134,916.0 | 196,947.8   | 34,141.6      | 55,133.9  | 79,116.6  | -         | -    | -   | 1,305.4               | 1,716.4     | 2,182.6     |
| PENNSYLVANIA  | 0209      | MONTGOMERY     | 41,480.7  | 35,497.0  | 73,233.2    | 15,098.5      | 20,387.2  | 26,646.6  | -         | -    | -   | 122,400.3             | 190,049.9   | 276,064.4   |
| PENNSYLVANIA  | 0297      | NORTHUMBERLAND | 121,627.8   | 191,849.5 | 263,182.5   | 52,749.8      | 74,873.6  | 102,827.0 | -         | -    | -   | 55,379.2              | 75,884.2    | 99,881.7    |
| PENNSYLVANIA  | 0299      | PERY           | 131,803.9   | 189,063.1 | 249,549.5   | 54,743.9      | 74,708.9  | 106,279.1 | -         | -    | -   | 184,377.6             | 264,723.1   | 368,009.4   |
| PENNSYLVANIA  | 0205      | POTTER         | 1,250.5   | 24,131.1  | 33,639.2    | 4,933.4       | 9,988.1   | 13,631.6  | -         | -    | -   | 194,547.8             | 265,771.9   | 349,828.5   |
| PENNSYLVANIA  | 0207      | SCHUYLKILL     | 121,252.2   | 182,616.7 | 251,202.4   | 45,367.7      | 64,541.6  | 88,342.8  | -         | -    | -   | 23,119.2              | 34,119.2    | 47,270.8    |
| PENNSYLVANIA  | 0209      | SNYDER         | 81,184.5  | 127,349.5 | 172,558.2   | 34,753.7      | 52,060.3  | 70,419.8  | -         | -    | -   | 172,619.9             | 247,158.4   | 339,585.2   |
| PENNSYLVANIA  | 0211      | SOMERSET       | 15,535.2  | 16,958.9  | 22,022.3    | 4,815.5       | 6,409.5   | 8,230.1   | -         | -    | -   | 123,938.2             | 179,309.8   | 242,978.0   |
| PENNSYLVANIA  | 0213      | SULLIVAN       | 15,019.4  | 26,649.6  | 35,628.9    | 10,306.9      | 14,203.7  | 18,771.6  | -         | -    | -   | 17,350.7              | 23,348.3    | 30,252.3    |
| PENNSYLVANIA  | 0215      | SUSQUEHANNA    | 132,470.4   | 178,240.1 | 230,716.2   | 69,383.8      | 91,648.9  | 117,084.3 | -         | -    | -   | 29,326.3              | 40,832.2    | 54,400.3    |
| PENNSYLVANIA  | 0217      | TIOGA          | 123,571.1   | 148,424.1 | 213,644.2   | 80,449.7      | 11,094.6  | 105,295.7 | -         | -    | -   | 201,854.2             | 269,889.0   | 347,800.5   |
| PENNSYLVANIA  | 0219      | UNION          | 81,276.5  | 112,782.2 | 150,330.1   | 28,969.5      | 39,641.4  | 52,339.7  | -         | -    | -   | 184,823.8             | 249,718.7   | 336,939.9   |
| PENNSYLVANIA  | 0219      | UNION          | 81,276.5  | 112,782.2 | 150,330.1   | 28,969.5      | 39,641.4  | 52,339.7  | -         | -    | -   | 118,246.0             | 152,423.7   | 202,489.7   |

Table 12

NITROGEN LOADED TO GRO WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHEESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHEESAPEAKE, Inc. |       |                | a. NITROGEN LOADED AND DELIVERED TO THE BAY FROM SEPTIC AND OTHER NON-SEWERED TREATMENT |           |             |               |           |           |           |          |          |                       |             |             |
|--|-------|----------------|---|-----------|-------------|---------------|-----------|-----------|-----------|----------|----------|-----------------------|-------------|-------------|
|  |       |                | TOTAL NITROGEN (LBS) LOADED TO:   |           |             |               |           |           |           |          |          | TOTAL NITROGEN LOADED |             |             |
|  |       |                | GROUND WATER  |           |             | SURFACE WATER |           |           | BAY WATER |          |          |                       |             |             |
| STATE  | FIPS  | COUNTY         | MIN   | MEAN      | MAX         | MIN           | MEAN      | MAX       | MIN       | MEAN     | MAX      | MIN                   | MEAN        | MAX         |
| PENNSYLVANIA   | 42127 | WAYNE          | 4,248.5   | 6,018.2   | 8,165.9     | 2,241.6       | 3,128.8   | 4,262.7   | -         | -        | -        | 6492.2                | 1,147.0     | 12,372.6    |
| PENNSYLVANIA   | 42131 | WYOMING        | 98,331.3  | 132,574.3 | 171,834.6   | 51,954.1      | 68,834.7  | 88,161.8  | -         | -        | -        | 158281.4              | 281,404.9   | 289,932.4   |
| PENNSYLVANIA   | 42133 | YORK           | 615,291.8   | 918,514.4 | 1,282,834.6 | 212,081.4     | 309,790.0 | 430,935.8 | -         | -        | -        | 828377.2              | 1,228,384.8 | 1,713,806.4 |
| VIRGINIA   | 51001 | ACCOMACK       | 48,188.8  | 74,473.1  | 107,387.1   | 21,124.7      | 32,112.6  | 43,790.7  | 8,609.7   | 13,003.5 | 18,783.6 | 77923.2               | 119,634.3   | 171,891.4   |
| VIRGINIA   | 51003 | ALBEMARLE      | 178,093.0   | 261,712.1 | 366,074.4   | 54,004.1      | 78,572.7  | 109,213.1 | -         | -        | -        | 231097.1              | 340,285.0   | 451,289.5   |
| VIRGINIA   | 51005 | ALLEGHANY      | 29,626.1  | 49,164.1  | 75,184.5    | 14,187.9      | 23,072.9  | 34,780.1  | -         | -        | -        | 41814.0               | 72,237.0    | 109,966.6   |
| VIRGINIA   | 51007 | ANNELEA        | 36,794.5  | 55,953.1  | 79,821.0    | 16,397.2      | 15,651.0  | 22,123.2  | -         | -        | -        | 41101.7               | 71,604.2    | 101,946.2   |
| VIRGINIA   | 51009 | AMHERST        | 102,492.2   | 151,964.6 | 212,661.4   | 29,562.7      | 42,911.8  | 59,129.6  | -         | -        | -        | 131034.9              | 194,878.4   | 271,798.0   |
| VIRGINIA   | 51011 | APPOMATTOX     | 33,882.7  | 46,724.5  | 62,394.5    | 16,239.4      | 13,961.8  | 18,511.9  | -         | -        | -        | 44122.1               | 60,689.2    | 86,936.4    |
| VIRGINIA   | 51013 | ARLINGTON      | 549.8   | 9,134.9   | 26,331.6    | 164.7         | 2,684.2   | 7,646.2   | -         | -        | -        | -                     | -           | -           |
| VIRGINIA   | 51015 | AUGUSTA        | 168,527.7   | 254,829.6 | 361,422.7   | 68,223.7      | 101,334.9 | 142,712.3 | -         | -        | -        | 1,153.9               | 716.5       | 15,122.7    |
| VIRGINIA   | 51017 | BATH           | 9,893.6   | 18,998.1  | 26,971.0    | 4,731.1       | 8,941.0   | 14,422.6  | -         | -        | -        | -                     | -           | -           |
| VIRGINIA   | 51019 | BEDFORD        | 36,374.3  | 52,433.7  | 72,044.5    | 10,591.1      | 14,988.0  | 20,332.0  | -         | -        | -        | 14623.8               | 27,939.1    | 45,401.6    |
| VIRGINIA   | 51023 | BOYDTON        | 44,998.6  | 67,571.3  | 95,971.2    | 18,389.0      | 27,502.2  | 38,648.7  | -         | -        | -        | 44965.4               | 67,421.7    | 124,378.4   |
| VIRGINIA   | 51029 | BUCKINGHAM     | 47,677.8  | 74,622.3  | 108,179.3   | 14,218.4      | 21,821.8  | 31,244.2  | -         | -        | -        | 61888.2               | 96,450.3    | 139,414.5   |
| VIRGINIA   | 51031 | CAMPBELL       | 53,570.0  | 73,976.0  | 97,941.4    | 16,852.1      | 21,792.1  | 28,514.5  | -         | -        | -        | 68622.1               | 96,768.2    | 136,461.9   |
| VIRGINIA   | 51033 | CAROLINE       | 73,764.4  | 112,278.0 | 160,031.8   | 23,413.3      | 35,091.8  | 49,264.1  | 1,391.1   | 1,777.3  | 2,316.6  | 98477.8               | 149,645.4   | 211,615.7   |
| VIRGINIA   | 51034 | CHARLES CITY   | 34,892.3  | 37,055.9  | 52,021.8    | 9,954.3       | 14,615.7  | 20,325.0  | 2,418.4   | 3,707.8  | 5,336.8  | 37285.0               | 55,423.3    | 77,685.7    |
| VIRGINIA   | 51037 | CHARLOTTE      | 5.0   | 7.3       | 11.2        | 1.4           | 2.1       | 3.0       | -         | -        | -        | 6.4                   | 9.9         | 14.2        |
| VIRGINIA   | 51041 | CHESTERFIELD   | 194,263.7   | 337,577.5 | 528,904.0   | 58,871.8      | 101,945.6 | 159,178.9 | 2,711.7   | 4,401.1  | 6,616.7  | 255854.3              | 449,977.3   | 694,695.6   |
| VIRGINIA   | 51043 | CLARKE         | 35,354.6  | 53,968.6  | 77,404.8    | 14,511.8      | 21,384.0  | 29,938.7  | -         | -        | -        | 49869.3               | 71,344.6    | 107,345.3   |
| VIRGINIA   | 51045 | CRAIG          | 12,234.8  | 18,172.9  | 25,271.0    | 5,718.8       | 8,348.6   | 11,446.7  | -         | -        | -        | 17945.6               | 26,513.6    | 46,743.7    |
| VIRGINIA   | 51047 | CULPEPER       | 81,339.6  | 124,232.1 | 177,551.6   | 27,764.6      | 41,638.9  | 58,728.1  | -         | -        | -        | 109104.2              | 161,863.1   | 246,281.7   |
| VIRGINIA   | 51049 | CUMBERLAND     | 32,654.3  | 51,471.2  | 75,101.3    | 8,781.5       | 13,538.3  | 19,488.8  | -         | -        | -        | 41444.7               | 61,829.5    | 94,588.1    |
| VIRGINIA   | 51053 | DINWIDDIE      | 16,605.9  | 24,975.1  | 35,391.0    | 3,477.3       | 5,142.5   | 7,196.3   | -         | -        | -        | 20883.3               | 30,118.0    | 42,588.3    |
| VIRGINIA   | 51057 | ESSEX          | 28,175.4  | 43,366.2  | 62,511.3    | 10,316.8      | 15,734.3  | 22,570.1  | 2,011.9   | 3,794.2  | 6,289.2  | 40511.1               | 61,894.7    | 91,377.6    |
| VIRGINIA   | 51059 | FAIRFAX        | 236,326.0   | 398,373.3 | 643,911.3   | 79,781.4      | 136,110.7 | 215,269.0 | 4,410.7   | 7,820.8  | 12,720.6 | 310588.2              | 541,305.2   | 811,900.9   |
| VIRGINIA   | 51061 | FAUQUIER       | 170,368.6   | 238,450.2 | 319,041.7   | 57,181.0      | 79,341.7  | 105,615.7 | -         | -        | -        | 227553.6              | 317,795.9   | 414,663.4   |
| VIRGINIA   | 51065 | FLUVANNA       | 46,487.7  | 69,375.1  | 97,491.7    | 11,492.3      | 16,923.8  | 23,539.9  | -         | -        | -        | 57980.0               | 86,298.9    | 111,059.6   |
| VIRGINIA   | 51069 | FREDERICK      | 113,655.7   | 176,674.1 | 257,931.6   | 41,796.0      | 63,924.5  | 92,231.6  | -         | -        | -        | 155451.7              | 240,600.6   | 350,219.2   |
| VIRGINIA   | 51071 | GILES          | 1,334.6   | 1,894.0   | 2,571.2     | 601.6         | 844.8     | 1,135.4   | -         | -        | -        | 1939.2                | 2,740.9     | 3,712.6     |
| VIRGINIA   | 51073 | GLOUCESTER     | 100,881.2   | 141,023.4 | 188,751.3   | 38,521.2      | 53,181.7  | 70,679.6  | 36,711.8  | 50,942.5 | 68,729.4 | 174108.2              | 245,154.6   | 357,664.3   |
| VIRGINIA   | 51075 | GOOCHLAND      | 58,549.4  | 85,884.5  | 119,941.7   | 16,901.9      | 24,431.1  | 33,846.3  | -         | -        | -        | 74511.3               | 110,343.7   | 163,814.0   |
| VIRGINIA   | 51079 | GREENE         | 40,955.9  | 58,981.8  | 81,061.3    | 14,691.5      | 21,001.3  | 28,730.4  | -         | -        | -        | 51650.4               | 79,988.9    | 109,793.7   |
| VIRGINIA   | 51085 | HANOVER        | 178,618.9   | 267,635.4 | 378,961.9   | 58,641.3      | 86,634.9  | 121,512.5 | -         | -        | -        | 231265.2              | 336,292.3   | 506,562.5   |
| VIRGINIA   | 51087 | HENRICO        | 82,211.8  | 154,322.7 | 247,081.0   | 27,211.1      | 50,201.0  | 83,848.3  | 2,216.6   | 3,126.5  | 4,341.4  | 111655.5              | 209,662.2   | 315,283.8   |
| VIRGINIA   | 51091 | HIGHLAND       | 7,590.7   | 13,905.8  | 22,101.8    | 3,649.2       | 6,584.5   | 10,339.7  | -         | -        | -        | 11190.8               | 20,490.3    | 32,645.5    |
| VIRGINIA   | 51093 | ISLE OF WIGHT  | 50,946.9  | 70,875.3  | 94,161.0    | 19,924.5      | 27,421.1  | 36,414.7  | 7,407.2   | 10,414.2 | 13,969.9 | 77380.6               | 107,914.6   | 144,550.4   |
| VIRGINIA   | 51095 | JAMES CITY     | 40,706.9  | 65,509.2  | 97,601.3    | 15,291.1      | 24,522.2  | 34,416.6  | 2,518.4   | 3,972.5  | 5,690.3  | 58334.4               | 91,954.9    | 139,739.2   |
| VIRGINIA   | 51097 | KING AND QUEEN | 28,224.1  | 39,422.7  | 52,631.8    | 10,046.1      | 13,794.3  | 18,206.4  | 1,706.6   | 2,344.0  | 3,462.1  | 40008.8               | 51,563.0    | 79,908.3    |
| VIRGINIA   | 51099 | KING GEORGE    | 41,001.9  | 60,708.1  | 84,331.3    | 14,624.4      | 20,944.2  | 28,849.1  | 4,111.4   | 6,315.8  | 9,970.0  | 60559.7               | 87,990.2    | 122,258.4   |
| VIRGINIA   | 51101 | KING WILLIAM   | 34,885.1  | 50,684.2  | 69,491.9    | 12,474.7      | 17,874.9  | 24,411.0  | 2,012.3   | 3,203.3  | 4,906.5  | 49364.8               | 71,844.4    | 103,831.4   |
| VIRGINIA   | 51103 | LANCASTER      | 27,710.9  | 43,438.3  | 61,441.3    | 10,992.1      | 16,464.8  | 23,418.3  | 10,611.0  | 26,925.0 | 37,774.4 | 57354.0               | 81,890.1    | 122,525.0   |
| VIRGINIA   | 51107 | LOUDOUN        | 98,684.0  | 152,542.0 | 222,481.9   | 25,111.1      | 44,384.7  | 64,012.6  | -         | -        | -        | 127798.1              | 194,926.7   | 288,541.5   |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>MCR-CHESAPEAKE, Inc. |      |                  | 2. NITROGEN LOADED AND DELIVERED TO THE BAY FROM SEPTIC AND OTHER NON-SEWERED TREATMENT |           |           |               |           |           |           |          |          |                       |           |           |
|---|------|------------------|---|-----------|-----------|---------------|-----------|-----------|-----------|----------|----------|-----------------------|-----------|-----------|
|   |      |                  | TOTAL NITROGEN (LBS) LOADED TO:   |           |           |               |           |           |           |          |          | TOTAL NITROGEN LOADED |           |           |
|   |      |                  | GROUND WATER  |           |           | SURFACE WATER |           |           | BAY WATER |          |          |                       |           |           |
|   |      |                  | N   |           |           |               |           |           |           |          |          | A                     |           |           |
| STATE   | FIPS | COUNTY           | MIN   | MEAN      | MAX       | MIN           | MEAN      | MAX       | MIN       | MEAN     | MAX      | MIN                   | MEAN      | MAX       |
| VIRGINIA  | 5109 | LOUISA           | 89,811.7  | 134,677.0 | 189,666.1 | 21,048.3      | 10,979.5  | 43,064.6  | -         | -        | -        | 110,860.0             | 165,656.3 | 232,730.7 |
| VIRGINIA  | 5111 | LUNENBERG        | 11.4  | 16.5      | 22.3      | 3.3           | 4.7       | 6.2       | -         | -        | -        | 14.9                  | 21.1      | 28.4      |
| VIRGINIA  | 5113 | MADISON          | 53,184.7  | 75,013.0  | 106,768.6 | 18,220.6      | 15,218.5  | 33,423.3  | -         | -        | -        | 71,405.3              | 100,231.5 | 134,191.9 |
| VIRGINIA  | 5115 | MATHEWS          | 23,788.6  | 32,668.4  | 42,858.6  | 12,371.7      | 16,739.2  | 21,732.4  | -         | -        | -        | 52,308.4              | 71,406.4  | 93,442.4  |
| VIRGINIA  | 5119 | MIDDLESEX        | 26,007.9  | 37,413.0  | 51,867.5  | 9,730.0       | 13,794.1  | 18,931.3  | 16,156.1  | 21,998.7 | 28,859.4 | 48,236.8              | 69,396.2  | 96,218.3  |
| VIRGINIA  | 5121 | MONTGOMERY       | 2102.7  | 3,105.3   | 4,301.4   | 1,012.1       | 1,470.3   | 2,013.7   | -         | -        | -        | 3,114.8               | 4,375.6   | 6,315.3   |
| VIRGINIA  | 5125 | NELSON           | 49,157.3  | 79,375.7  | 117,035.9 | 14,575.2      | 13,161.3  | 33,938.9  | -         | -        | -        | 64,032.5              | 102,337.0 | 150,974.8 |
| VIRGINIA  | 5127 | NEW KENT         | 45,284.6  | 61,054.3  | 78,775.9  | 18,143.2      | 23,845.7  | 30,474.8  | 4,106.0   | 5,501.3  | 7,207.6  | 68,033.7              | 90,401.2  | 116,458.3 |
| VIRGINIA  | 5131 | NORTHAMPTON      | 22,728.5  | 36,247.0  | 52,376.5  | 8,152.1       | 12,775.6  | 18,579.9  | 5,190.8   | 8,327.1  | 12,474.4 | 36,071.3              | 57,349.7  | 84,430.7  |
| VIRGINIA  | 5133 | NORTHAMBERLAND   | 29,523.5  | 44,323.2  | 63,063.8  | 11,197.7      | 16,524.5  | 23,249.7  | -         | -        | -        | 59,791.4              | 89,112.9  | 126,375.7 |
| VIRGINIA  | 5135 | NOTTOWAY         | 18,993.7  | 31,552.5  | 48,410.3  | 4,805.1       | 7,957.0   | 11,997.8  | 19,070.1  | 28,265.1 | 40,042.2 | 23,398.9              | 39,309.5  | 60,408.1  |
| VIRGINIA  | 5139 | ORANGE           | 63,796.1  | 94,049.9  | 131,297.2 | 18,900.1      | 17,508.8  | 38,092.4  | -         | -        | -        | 82,690.2              | 121,358.7 | 169,389.6 |
| VIRGINIA  | 5139 | PAGE             | 53,362.1  | 82,623.0  | 121,099.8 | 24,318.4      | 16,818.8  | 33,096.1  | -         | -        | -        | 77,680.4              | 119,441.8 | 174,195.9 |
| VIRGINIA  | 5135 | POWHEATAN        | 65,123.8  | 89,114.3  | 117,451.3 | 20,223.5      | 17,116.4  | 35,375.4  | -         | -        | -        | 85,647.3              | 116,230.6 | 152,076.9 |
| VIRGINIA  | 5117 | PRINCE EDWARD    | 44,120.9  | 67,494.4  | 96,311.2  | 15,703.4      | 13,733.8  | 33,780.1  | -         | -        | -        | 60,224.2              | 91,228.3  | 130,091.3 |
| VIRGINIA  | 5119 | PRINCE GEORGE    | 26,117.8  | 36,664.2  | 53,703.4  | 8,218.4       | 12,234.5  | 17,193.6  | 890.3     | 1,281.7  | 1,767.3  | 29,626.4              | 44,180.5  | 62,744.3  |
| VIRGINIA  | 5113 | PRINCE WILLIAM   | 162,889.2   | 241,101.5 | 352,663.8 | 52,413.8      | 73,217.5  | 110,133.9 | 753.5     | 2,323.8  | 4,713.4  | 215,256.5             | 323,742.8 | 467,511.1 |
| VIRGINIA  | 5117 | RAPPAHANNOCK     | 27,155.1  | 41,674.8  | 51,236.4  | 7,919.3       | 13,148.9  | 17,428.8  | -         | -        | -        | 35,674.4              | 54,823.7  | 78,657.3  |
| VIRGINIA  | 5119 | RICHLAND         | 23,137.8  | 37,271.9  | 54,022.8  | 8,031.8       | 13,644.9  | 19,611.2  | 2,297.2   | 3,700.3  | 5,471.8  | 34,966.8              | 54,617.1  | 79,163.8  |
| VIRGINIA  | 5111 | ROANOKE          | 4,321.4   | 6,321.4   | 7,886.3   | 2,026.7       | 2,560.7   | 3,158.6   | -         | -        | -        | 6,948.1               | 8,882.1   | 11,044.8  |
| VIRGINIA  | 5113 | ROCKBRIDGE       | 62,156.1  | 97,041.4  | 141,547.5 | 24,674.3      | 17,823.8  | 34,342.1  | -         | -        | -        | 86,930.4              | 134,865.2 | 196,089.6 |
| VIRGINIA  | 5115 | ROCKINGHAM       | 175,303.6   | 264,733.8 | 376,619.7 | 71,789.1      | 106,313.9 | 149,308.9 | -         | -        | -        | 247,292.7             | 371,049.8 | 523,930.6 |
| VIRGINIA  | 5117 | SHENANDOAH       | 73,067.7  | 123,394.2 | 185,724.4 | 28,371.2      | 46,362.7  | 69,889.0  | -         | -        | -        | 101,999.0             | 168,896.9 | 255,613.5 |
| VIRGINIA  | 5117 | SPOTSYLVANIA     | 119,412.4   | 175,888.9 | 249,906.6 | 22,058.0      | 48,343.8  | 68,691.0  | 1,054.5   | 2,037.2  | 3,358.7  | 152,717.1             | 230,343.9 | 326,956.3 |
| VIRGINIA  | 5119 | STAFFORD         | 111,167.9   | 168,796.6 | 242,630.8 | 35,088.5      | 53,232.6  | 76,534.5  | 4,815.8   | 8,111.2  | 12,406.3 | 151,072.2             | 230,140.5 | 331,571.6 |
| VIRGINIA  | 5111 | SURRY            | 10,360.3  | 15,940.9  | 22,032.8  | 3,990.8       | 6,046.7   | 8,574.4   | 1,102.4   | 1,632.7  | 2,284.6  | 15,453.5              | 23,620.2  | 33,711.2  |
| VIRGINIA  | 5117 | WARREN           | 62,355.6  | 94,456.1  | 135,846.6 | 27,314.1      | 39,124.7  | 53,868.0  | -         | -        | -        | 89,569.7              | 129,580.8 | 179,712.6 |
| VIRGINIA  | 5113 | WESTMORELAND     | 44,443.6  | 61,114.9  | 85,556.9  | 18,170.3      | 27,098.9  | 38,288.6  | 9,051.0   | 14,724.5 | 22,401.2 | 71,664.9              | 108,938.4 | 156,248.7 |
| VIRGINIA  | 5119 | YORK             | 42,074.7  | 61,301.5  | 99,864.4  | 20,838.5      | 32,997.9  | 48,648.4  | 32,570.0  | 44,160.4 | 57,671.9 | 95,483.2              | 144,439.8 | 206,184.7 |
| VIRGINIA  | 5150 | ALEXANDRIA       | 208.7   | 2,106.7   | 6,823.7   | 53.3          | 549.5     | 1,760.2   | -         | -        | -        | 264.0                 | 2,656.4   | 8,584.8   |
| VIRGINIA  | 5150 | BUENA VISTA      | -   | 1,440.9   | 4,680.1   | -             | 651.3     | 2,093.7   | -         | -        | -        | -                     | 2,092.2   | 6,773.8   |
| VIRGINIA  | 5150 | CHARLOTTESVILLE  | 336.1   | 1,151.6   | 4,256.1   | 111.7         | 1,685.3   | 4,611.6   | -         | -        | -        | -                     | 4,836.9   | 18,067.7  |
| VIRGINIA  | 5150 | CHESAPEAKE CITY  | 25,412.3  | 51,642.6  | 111,909.6 | 13,460.0      | 28,733.2  | 51,099.1  | 312.5     | 2,145.6  | 5,384.3  | 38,914.8              | 86,361.4  | 158,992.9 |
| VIRGINIA  | 5150 | CLIFTON FORGE    | -   | 62.0      | 297.0     | -             | 31.0      | 147.0     | -         | -        | -        | -                     | 93.0      | 444.0     |
| VIRGINIA  | 5150 | COLONIAL HEIGHTS | -   | 270.3     | 1,092.2   | -             | 134.2     | 518.4     | -         | -        | -        | -                     | 404.3     | 1,641.6   |
| VIRGINIA  | 5150 | COVINGTON        | -   | 169.3     | 736.4     | -             | 66.7      | 287.5     | -         | -        | -        | -                     | 236.0     | 1,024.0   |
| VIRGINIA  | 5160 | FAIRFAX          | 82.3  | 1,787.1   | 4,530.6   | 36.5          | 597.3     | 1,564.9   | -         | -        | -        | 138.8                 | 2,304.4   | 6,095.5   |
| VIRGINIA  | 5160 | FALLS CHURCH     | -   | 574.9     | 1,643.1   | -             | 171.4     | 484.3     | -         | -        | -        | -                     | 746.3     | 2,127.6   |
| VIRGINIA  | 5163 | FREDERICKSBURG   | -   | 1,063.5   | 3,377.4   | -             | 433.6     | 1,400.8   | -         | -        | -        | -                     | 1,614.3   | 3,389.2   |
| VIRGINIA  | 5163 | HAMPTON CITY     | 1,888.3   | 12,994.7  | 32,324.5  | 1,097.8       | 1,567.5   | 18,637.8  | 816.9     | 4,182.4  | 9,769.8  | 3,803.2               | 24,744.6  | 60,732.1  |
| VIRGINIA  | 5160 | HARRISONBURG     | 1,077.8   | 7,315.4   | 15,751.9  | 632.9         | 1,716.8   | 5,785.3   | -         | -        | -        | 2,310.7               | 10,032.2  | 21,532.2  |
| VIRGINIA  | 5167 | HOPEWELL         | 38.0  | 3,293.5   | 10,049.5  | 123.0         | 1,184.8   | 3,279.0   | -         | -        | -        | 491.0                 | 4,781.1   | 13,348.1  |
| VIRGINIA  | 5167 | LEESMINGTON      | -   | 148.7     | 316.9     | -             | 52.3      | 190.1     | -         | -        | -        | -                     | 193.0     | 787.0     |
| VIRGINIA  | 5169 | LYNCHBURG        | 43,580.4  | 74,172.0  | 118,119.6 | 11,646.3      | 21,964.2  | 33,660.9  | -         | -        | -        | 57,196.7              | 97,136.1  | 151,780.5 |

Table 12

**NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES**

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRJ-CHESAPEAKE, Inc. |       |                     | B. NITROGEN LOADED AND DELIVERED TO THE BAY FROM SEPTIC AND OTHER NON-SEWERED TREATMENT |              |              |               |             |              |           |           |             |                       |              |              |
|--|-------|---------------------|---|--------------|--------------|---------------|-------------|--------------|-----------|-----------|-------------|-----------------------|--------------|--------------|
|  |       |                     | TOTAL NITROGEN (LBS) LOADED TO:   |              |              |               |             |              |           |           |             | TOTAL NITROGEN LOADED |              |              |
|  |       |                     | GROUND WATER  |              |              | SURFACE WATER |             |              | BAY WATER |           |             |                       |              |              |
| STATE  | FIPS  | COUNTY              | MIN   | MEAN         | MAX          | MIN           | MEAN        | MAX          | MIN       | MEAN      | MAX         | MIN                   | MEAN         | MAX          |
| VIRGINIA   | 51683 | MANASSAS CITY       | 264.4   | 2,847.2      | 7,311.1      | 79.7          | 845.4       | 2,147.9      | -         | -         | -           | 34.1                  | 3,092.6      | 9,459.1      |
| VIRGINIA   | 51685 | MANASSAS PARK CITY  | -   | -            | -            | -             | -           | -            | -         | -         | -           | -                     | -            | -            |
| VIRGINIA   | 51700 | NEWPORT NEWS CITY   | 5,681.2   | 24,594.9     | 55,469.1     | 2,737.8       | 11,674.3    | 26,116.5     | 1,673.8   | 5,595.6   | 12,073.6    | 10,092.8              | 42,128.8     | 93,664.3     |
| VIRGINIA   | 51710 | NORFOLK CITY        | 361.2   | 14,060.6     | 43,114.1     | 228.1         | 7,444.9     | 22,800.0     | 647       | 4,378.1   | 13,551.9    | 810.1                 | 23,883.6     | 79,549.1     |
| VIRGINIA   | 51730 | PETERSBURG          | 81.7  | 2,095.5      | 6,722.1      | 27.1          | 655.0       | 2,070.3      | -         | -         | -           | 119.5                 | 2,750.5      | 8,792.6      |
| VIRGINIA   | 51735 | POQUOSON            | 3,321.0   | 7,383.4      | 13,104.1     | 1,929.4       | 4,233.4     | 7,439.2      | 8,906.8   | 15,794.2  | 24,609.2    | 14,117.4              | 27,111.2     | 43,144.2     |
| VIRGINIA   | 51740 | PORTSMOUTH CITY     | 74.4  | 6,688.1      | 22,323.1     | 39.1          | 3,630.4     | 12,091.4     | 645       | 1,287.4   | 3,896.4     | 178.1                 | 11,805.9     | 34,511.4     |
| VIRGINIA   | 51760 | RICHMOND CITY       | 7,641.2   | 32,485.1     | 74,991.1     | 1,952.1       | 9,550.4     | 22,751.1     | -         | 100.1     | 300.2       | 9,313.7               | 42,135.2     | 91,043.3     |
| VIRGINIA   | 51790 | STAUNTON            | 299.8   | 5,411.1      | 14,286.1     | 118.4         | 2,023.1     | 5,270.1      | -         | -         | -           | 48.4                  | 7,634.5      | 11,557.0     |
| VIRGINIA   | 51800 | SUFFOLK CITY        | 48,306.4  | 103,614.6    | 147,877.1    | 30,943.1      | 46,265.1    | 65,424.6     | 12,371.0  | 16,818.2  | 22,007.0    | 111,703.9             | 166,698.3    | 231,309.1    |
| VIRGINIA   | 51810 | VIRGINIA BEACH CITY | 29,942.1  | 64,808.6     | 118,620.1    | 12,237.1      | 26,877.1    | 49,416.4     | 7,901.4   | 15,111.1  | 25,028.9    | 50,106.4              | 104,797.2    | 191,519.3    |
| VIRGINIA   | 51820 | WAYNESBORO          | 1,368.7   | 7,379.9      | 17,278.1     | 487.9         | 2,821.7     | 6,543.9      | -         | -         | -           | 1,754.6               | 10,201.4     | 21,822.1     |
| VIRGINIA   | 51830 | WILLIAMSBORO        | 68.3  | 1,754.3      | 5,293.1      | 28.6          | 731.1       | 2,172.9      | -         | -         | -           | 94.9                  | 2,485.3      | 7,464.5      |
| VIRGINIA   | 51840 | WINCHESTER          | 943.3   | 5,138.6      | 11,773.1     | 302.3         | 1,622.1     | 3,679.7      | -         | -         | -           | 1,474.6               | 6,761.5      | 11,444.0     |
| WEST VIRGINIA  | 54003 | BERKELEY            | 149,962.5   | 226,547.3    | 322,589.1    | 50,001.7      | 74,246.7    | 104,376.7    | -         | -         | -           | 199,164.3             | 300,814.0    | 428,963.8    |
| WEST VIRGINIA  | 54023 | GRANT               | 28,882.5  | 44,977.3     | 65,167.1     | 13,143.1      | 20,048.1    | 28,693.5     | -         | -         | -           | 42,125.6              | 64,975.7     | 91,859.8     |
| WEST VIRGINIA  | 54025 | GREENBRIAR          | 6.2   | 12.7         | 21.7         | 3.2           | 6.1         | 10.9         | -         | -         | -           | 9.5                   | 19.1         | 32.6         |
| WEST VIRGINIA  | 54027 | HAMPSHIRE           | 53,570.9  | 83,775.4     | 122,584.4    | 23,676.5      | 39,554.1    | 57,111.3     | -         | -         | -           | 79,474.4              | 123,329.5    | 179,393.7    |
| WEST VIRGINIA  | 54031 | HARDY               | 28,618.4  | 48,471.9     | 74,121.3     | 13,769.6      | 22,942.5    | 34,694.7     | -         | -         | -           | 42,888.0              | 71,414.4     | 108,818.0    |
| WEST VIRGINIA  | 54037 | JEFFERSON           | 98,161.4  | 141,961.5    | 195,869.2    | 34,488.4      | 48,801.1    | 66,331.8     | -         | -         | -           | 132,498.8             | 190,742.6    | 261,202.0    |
| WEST VIRGINIA  | 54057 | MINERAL             | 53,008.8  | 81,902.4     | 119,506.9    | 23,737.6      | 36,819.3    | 53,921.8     | -         | -         | -           | 76,738.4              | 118,722.6    | 170,430.7    |
| WEST VIRGINIA  | 54063 | MONROE              | 2,753.4   | 4,559.2      | 6,839.0      | 1,258.0       | 2,018.5     | 3,037.7      | -         | -         | -           | 4,111.4               | 6,607.4      | 1,874.7      |
| WEST VIRGINIA  | 54065 | MORGAN              | 38,999.9  | 54,800.9     | 79,072.1     | 17,328.1      | 24,823.0    | 34,178.8     | -         | -         | -           | 56,128.0              | 81,623.8     | 111,250.9    |
| WEST VIRGINIA  | 54071 | PENDLETON           | 25,273.6  | 41,897.8     | 62,812.9     | 11,617.6      | 18,964.1    | 28,121.4     | -         | -         | -           | 34,991.2              | 60,862.2     | 90,938.4     |
| WEST VIRGINIA  | 54075 | POCAHONTAS          | 7.7   | 13.2         | 20.5         | 4.2           | 7.1         | 10.9         | -         | -         | -           | 11.9                  | 20.4         | 31.5         |
| WEST VIRGINIA  | 54077 | PRESTON             | 226.0   | 322.2        | 439.6        | 78.2          | 109.7       | 141.0        | -         | -         | -           | 104.2                 | 431.9        | 587.6        |
| WEST VIRGINIA  | 54083 | RANDOLPH            | 4.8   | 10.4         | 15.5         | 3.4           | 5.3         | 7.6          | -         | -         | -           | 10.3                  | 15.9         | 23.2         |
| WEST VIRGINIA  | 54093 | TUCKER              | 8.4   | 46.3         | 103.1        | 3.5           | 17.3        | 37.4         | -         | -         | -           | 11.8                  | 63.8         | 140.6        |
| Grand Total  |       |                     | 15,825,545.7  | 23,754,369.5 | 34,009,671.9 | 5,910,259.6   | 8,753,273.5 | 12,374,995.0 | 643,116.9 | 965,923.7 | 1,392,886.0 | 22,408,122.2          | 33,471,566.8 | 47,777,554.8 |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AT  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

b. NITROGEN DELIVERED TO THE BAY

| STATE                | FIPS  | COUNTY          | TOTAL NITROGEN LOADED |           |             | NITROGEN TRANSPORTED (LBS) |           |             |
|----------------------|-------|-----------------|-----------------------|-----------|-------------|----------------------------|-----------|-------------|
|                      |       |                 | MIN                   | MEAN      | MAX         | MIN                        | MEAN      | MAX         |
|                      |       |                 |                       |           |             |                            |           |             |
| DELAWARE             | 10001 | KENT            | 97,683.1              | 130,032.7 | 167,841.5   | 97,685.1                   | 130,032.7 | 167,841.6   |
| DELAWARE             | 10003 | NEW CASTLE      | 25,944.8              | 34,429.1  | 44,074.4    | 25,944.8                   | 34,429.1  | 44,074.4    |
| DELAWARE             | 10005 | SUSSEX          | 210,887.3             | 299,260.1 | 405,059.6   | 211,118.8                  | 299,259.8 | 405,060.5   |
| DISTRICT OF COLUMBIA | 11001 | WASHINGTON      | 903.3                 | 48,625.8  | 150,806.1   | 903.3                      | 48,625.8  | 150,806.1   |
| MARYLAND             | 24001 | ALLEGANY        | 56,370.2              | 114,283.7 | 197,224.7   | 40,711.8                   | 80,869.3  | 138,994.3   |
| MARYLAND             | 24003 | ANNE ARUNDEL    | 655,327.8             | 980,954.8 | 1,401,155.4 | 653,141.3                  | 975,817.4 | 1,352,053.0 |
| MARYLAND             | 24005 | BALTIMORE       | 515,311.1             | 786,346.3 | 1,162,914.1 | 515,311.4                  | 786,347.3 | 1,162,915.4 |
| MARYLAND             | 24009 | CALVERT         | 298,674.3             | 405,748.4 | 531,746.2   | 298,574.4                  | 405,748.6 | 531,746.5   |
| MARYLAND             | 24011 | CAROLINE        | 110,578.2             | 163,112.1 | 228,847.6   | 110,935.5                  | 163,112.1 | 228,847.6   |
| MARYLAND             | 24013 | CARROLL         | 504,045.0             | 700,080.3 | 935,855.0   | 474,782.3                  | 659,083.7 | 880,627.5   |
| MARYLAND             | 24015 | CECIL           | 251,045.0             | 368,728.8 | 516,013.3   | 250,935.3                  | 368,346.5 | 515,503.0   |
| MARYLAND             | 24017 | CHARLES         | 249,195.5             | 377,219.0 | 540,036.7   | 249,290.3                  | 377,218.7 | 540,036.8   |
| MARYLAND             | 24019 | DORCHESTER      | 81,975.2              | 127,079.0 | 185,911.7   | 81,978.1                   | 127,079.0 | 185,911.7   |
| MARYLAND             | 24021 | FREDERICK       | 434,786.9             | 630,918.0 | 877,664.0   | 352,699.6                  | 511,762.0 | 711,990.5   |
| MARYLAND             | 24023 | GARRETT         | 25,967.5              | 38,078.7  | 53,373.7    | 17,955.1                   | 26,329.4  | 36,905.0    |
| MARYLAND             | 24025 | HARFORD         | 450,312.9             | 639,732.3 | 872,502.3   | 448,108.4                  | 636,622.0 | 868,375.3   |
| MARYLAND             | 24027 | HOWARD          | 203,822.5             | 310,347.6 | 451,909.7   | 123,307.8                  | 200,886.6 | 307,140.1   |
| MARYLAND             | 24029 | KENT            | 48,646.9              | 83,328.7  | 130,047.0   | 48,646.9                   | 83,328.7  | 130,046.9   |
| MARYLAND             | 24031 | MONTGOMERY      | 264,645.7             | 450,848.6 | 714,314.4   | 202,994.3                  | 361,698.5 | 590,394.8   |
| MARYLAND             | 24033 | PRINCE GEORGE'S | 99,553.4              | 251,969.0 | 492,323.1   | 98,411.7                   | 248,184.5 | 484,047.9   |
| MARYLAND             | 24035 | QUEEN ANNE'S    | 151,897.1             | 216,469.1 | 295,181.1   | 151,897.0                  | 216,469.1 | 295,181.2   |
| MARYLAND             | 24037 | SAINT MARY'S    | 325,494.4             | 464,547.0 | 635,704.5   | 325,915.0                  | 464,546.3 | 635,705.6   |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                | b. NITROGEN DELIVERED TO THE BAY |           |           |                            |           |           |
|--|-------|----------------|----------------------------------|-----------|-----------|----------------------------|-----------|-----------|
|  |       |                | TOTAL NITROGEN LOADED            |           |           | NITROGEN TRANSPORTED (LBS) |           |           |
| STATE  | FIPS  | COUNTY         | MIN                              | MEAN      | MAX       | MIN                        | MEAN      | MAX       |
| MARYLAND   | 24039 | SOMERSET       | 72,608.5                         | 107,967.5 | 153,828.3 | 72,608.5                   | 107,967.4 | 153,828.3 |
| MARYLAND   | 24041 | TALBOT         | 102,617.3                        | 147,944.5 | 206,598.2 | 102,754.3                  | 147,944.5 | 206,598.2 |
| MARYLAND   | 24043 | WASHINGTON     | 289,967.7                        | 429,874.0 | 605,804.3 | 233,005.7                  | 345,402.4 | 486,733.1 |
| MARYLAND   | 24045 | WICOMICO       | 243,015.4                        | 346,208.3 | 474,151.1 | 243,397.7                  | 346,405.5 | 474,150.5 |
| MARYLAND   | 24047 | WORCESTER      | 42,875.5                         | 63,913.5  | 90,741.2  | 42,938.0                   | 63,913.6  | 90,741.3  |
| MARYLAND   | 24510 | BALTIMORE CITY | 5,510.1                          | 139,974.2 | 389,849.8 | 5,550.1                    | 139,974.3 | 389,850.0 |
| NEW YORK   | 36003 | ALLEGANY       | 16,133.0                         | 22,806.5  | 31,300.1  | 11,633.6                   | 16,446.0  | 22,570.8  |
| NEW YORK   | 36007 | BROOME         | 403,973.1                        | 576,596.3 | 793,064.4 | 211,710.5                  | 302,146.5 | 415,582.1 |
| NEW YORK   | 36011 | CAYUGA         | 346.2                            | 440.5     | 540.7     | 181.4                      | 230.8     | 283.3     |
| NEW YORK   | 36015 | CHEMUNG        | 205,874.9                        | 292,747.4 | 402,982.4 | 145,909.0                  | 207,673.7 | 286,068.3 |
| NEW YORK   | 36017 | CHENANGO       | 231,373.8                        | 329,334.6 | 452,569.2 | 121,244.5                  | 172,577.9 | 237,155.5 |
| NEW YORK   | 36023 | CORTLAND       | 122,448.9                        | 178,162.2 | 249,849.7 | 64,165.7                   | 93,360.5  | 130,926.2 |
| NEW YORK   | 36025 | DELAWARE       | 60,657.4                         | 82,313.5  | 109,497.1 | 31,785.7                   | 43,134.0  | 57,378.6  |
| NEW YORK   | 36043 | HERKIMER       | 28,673.5                         | 37,090.2  | 46,832.6  | 15,025.5                   | 19,436.0  | 24,541.2  |
| NEW YORK   | 36051 | LIVINGSTON     | 2,481.4                          | 3,254.9   | 4,220.9   | 1,789.4                    | 2,347.1   | 3,043.7   |
| NEW YORK   | 36053 | MADISON        | 84,013.5                         | 115,428.7 | 153,207.0 | 44,133.3                   | 60,487.0  | 80,283.5  |
| NEW YORK   | 36065 | ONEIDA EAST    | 15,480.9                         | 20,964.3  | 27,643.7  | 8,112.3                    | 10,985.7  | 14,485.9  |
| NEW YORK   | 36067 | ONONDAGA       | 13,452.4                         | 19,160.1  | 26,256.1  | 7,049.3                    | 10,040.3  | 13,758.7  |
| NEW YORK   | 36069 | ONTARIO        | 793.7                            | 1,013.9   | 1,248.6   | 572.3                      | 731.1     | 900.4     |
| NEW YORK   | 36077 | OTSEGO         | 252,441.7                        | 347,424.0 | 465,971.0 | 132,284.4                  | 182,057.1 | 244,178.0 |
| NEW YORK   | 36095 | SCHOHARIE      | 6,622.9                          | 9,358.1   | 12,987.4  | 3,470.5                    | 4,903.8   | 6,805.7   |
| NEW YORK   | 36097 | SCHUYLER       | 26,343.5                         | 36,357.5  | 48,751.6  | 17,309.7                   | 24,020.6  | 32,375.8  |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |           |            | b. NITROGEN DELIVERED TO THE BAY |           |           |                            |           |           |
|--|-----------|------------|----------------------------------|-----------|-----------|----------------------------|-----------|-----------|
|  |           |            | TOTAL NITROGEN LOADED            |           |           | NITROGEN TRANSPORTED (LBS) |           |           |
| STATE  | FIPS      | COUNTY     | MIN                              | MEAN      | MAX       | MIN                        | MEAN      | MAX       |
| NEW YORK   | 36101     | STEBEN     | 289,596.5                        | 425,247.0 | 598,461.6 | 208,931.6                  | 306,650.0 | 431,557.1 |
| NEW YORK   | 36107     | TIOGA      | 221,987.7                        | 308,120.9 | 414,709.5 | 116,493.5                  | 161,711.3 | 217,733.2 |
| NEW YORK   | 36109     | TOMPKINS   | 33,823.0                         | 45,452.7  | 58,810.7  | 17,725.3                   | 23,818.2  | 30,818.0  |
| NEW YORK   | 36123     | YATES      | 1,609.6                          | 2,251.3   | 3,051.2   | 1,160.7                    | 1,623.4   | 2,200.2   |
| PENNSYLVANIA   | 42001     | ADAMS      | 261,734.7                        | 368,152.2 | 494,808.9 | 220,442.1                  | 309,958.8 | 416,470.1 |
| PENNSYLVANIA   | 42009     | BEDFORD    | 245,229.2                        | 329,954.9 | 427,170.0 | 103,704.7                  | 139,168.5 | 179,646.5 |
| PENNSYLVANIA   | 42011     | BERKS      | 73,736.4                         | 97,515.6  | 125,852.7 | 65,125.6                   | 86,496.3  | 111,238.4 |
| PENNSYLVANIA   | 42,013.00 | BLAIR      | 213,867.6                        | 328,693.1 | 483,898.6 | 161,886.9                  | 249,292.4 | 367,611.6 |
| PENNSYLVANIA   | 42015     | BRADFORD   | 275,901.8                        | 375,113.5 | 491,608.6 | 182,133.9                  | 247,038.0 | 322,930.9 |
| PENNSYLVANIA   | 42021     | CAMBRIA    | 98,160.6                         | 138,753.1 | 187,104.8 | 72,441.6                   | 102,376.6 | 138,021.0 |
| PENNSYLVANIA   | 42023     | CAMERON    | 16,160.2                         | 25,902.7  | 38,129.0  | 11,102.0                   | 17,795.1  | 26,194.6  |
| PENNSYLVANIA   | 42025     | CARBON     | 8.5                              | 11.0      | 13.9      | 6.4                        | 8.3       | 10.4      |
| PENNSYLVANIA   | 42027     | CENTRE     | 224,170.2                        | 327,499.1 | 457,621.9 | 166,412.2                  | 241,859.5 | 336,494.2 |
| PENNSYLVANIA   | 42029     | CHESTER    | 137,045.4                        | 180,216.0 | 228,969.7 | 135,831.5                  | 178,703.1 | 227,074.3 |
| PENNSYLVANIA   | 42033     | CLEARFIELD | 240,401.1                        | 337,803.2 | 453,415.7 | 176,690.9                  | 248,347.9 | 333,424.5 |
| PENNSYLVANIA   | 42035     | CLINTON    | 81,395.7                         | 120,818.5 | 169,064.8 | 55,968.1                   | 83,023.3  | 116,173.8 |
| PENNSYLVANIA   | 42037     | COLUMBIA   | 236,371.4                        | 315,775.3 | 408,977.0 | 177,781.9                  | 237,493.7 | 307,589.1 |
| PENNSYLVANIA   | 42041     | CUMBERLAND | 325,038.6                        | 482,060.6 | 681,978.2 | 273,328.5                  | 405,536.0 | 573,922.3 |
| PENNSYLVANIA   | 42043     | DAUPHIN    | 301,671.6                        | 461,843.1 | 674,337.8 | 256,702.1                  | 393,264.0 | 574,558.8 |
| PENNSYLVANIA   | 42047     | ELK        | 30,252.8                         | 43,301.3  | 59,020.3  | 20,783.7                   | 29,747.9  | 40,546.9  |
| PENNSYLVANIA   | 42055     | FRANKLIN   | 284,345.0                        | 430,125.9 | 515,033.0 | 229,437.5                  | 347,052.2 | 496,226.8 |
| PENNSYLVANIA   | 42057     | FULTON     | 76,903.2                         | 101,495.8 | 129,061.8 | 60,025.0                   | 79,115.7  | 100,494.1 |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AT  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES

NCRI-CHESAPEAKE, Inc.

b. NITROGEN DELIVERED TO THE BAY

| STATE        | FIPS  | COUNTY         | TOTAL NITROGEN LOADED |             |             | NITROGEN TRANSPORTED (LBS) |             |             |
|--------------|-------|----------------|-----------------------|-------------|-------------|----------------------------|-------------|-------------|
|              |       |                | MIN                   | MEAN        | MAX         | MIN                        | MEAN        | MAX         |
|              |       |                | PENNSYLVANIA          | 42061       | HUNTINGDON  | 171,520.9                  | 232,613.4   | 303,557.4   |
| PENNSYLVANIA | 42063 | INDIANA        | 20,240.2              | 28,324.1    | 37,718.3    | 14,956.2                   | 20,929.7    | 27,871.4    |
| PENNSYLVANIA | 42065 | JEFFERSON      | 23.0                  | 31.6        | 41.3        | 17.0                       | 23.3        | 30.5        |
| PENNSYLVANIA | 42067 | JUNIATA        | 102,459.1             | 140,632.4   | 184,808.5   | 79,518.0                   | 109,106.6   | 143,336.9   |
| PENNSYLVANIA | 42069 | LACKAWANNA     | 156,133.7             | 237,554.8   | 352,304.2   | 102,916.5                  | 156,585.8   | 232,224.0   |
| PENNSYLVANIA | 42071 | LANCASTER      | 866,988.8             | 1,301,929.7 | 1,856,120.1 | 790,759.1                  | 1,182,658.2 | 1,683,565.6 |
| PENNSYLVANIA | 42075 | LEBANON        | 218,638.3             | 314,223.4   | 433,107.0   | 190,415.6                  | 273,588.6   | 377,033.1   |
| PENNSYLVANIA | 42079 | LUZERNE        | 366,236.7             | 556,897.7   | 813,410.8   | 267,659.7                  | 406,608.1   | 593,263.3   |
| PENNSYLVANIA | 42081 | LYCOMING       | 349,876.9             | 480,559.0   | 636,901.9   | 257,842.9                  | 353,896.8   | 468,696.9   |
| PENNSYLVANIA | 42083 | MCKEAN         | 1,305.4               | 1,716.4     | 2,182.6     | 896.8                      | 1,179.1     | 1,499.5     |
| PENNSYLVANIA | 42087 | MIFFLIN        | 122,400.3             | 190,049.9   | 276,064.4   | 94,310.9                   | 146,340.0   | 212,586.8   |
| PENNSYLVANIA | 42093 | MONTOUR        | 55,579.2              | 75,884.2    | 99,881.7    | 42,414.3                   | 57,869.3    | 76,132.7    |
| PENNSYLVANIA | 42097 | NORTHUMBERLAND | 186,377.6             | 256,723.1   | 368,009.4   | 145,381.5                  | 207,551.1   | 285,713.5   |
| PENNSYLVANIA | 42099 | PERRY          | 194,547.8             | 265,771.9   | 349,828.5   | 158,945.0                  | 217,163.2   | 285,893.3   |
| PENNSYLVANIA | 42105 | POTTER         | 23,183.9              | 34,119.2    | 47,270.8    | 16,189.4                   | 23,787.2    | 32,919.2    |
| PENNSYLVANIA | 42107 | SCHUYLKILL     | 172,619.9             | 247,158.4   | 339,585.2   | 143,591.2                  | 205,671.9   | 282,684.5   |
| PENNSYLVANIA | 42109 | SNYDER         | 125,938.2             | 179,309.8   | 242,978.0   | 104,055.8                  | 148,141.9   | 200,732.4   |
| PENNSYLVANIA | 42111 | SOMERSET       | 17,350.7              | 23,368.3    | 30,252.3    | 10,764.6                   | 14,551.4    | 18,886.4    |
| PENNSYLVANIA | 42113 | SULLIVAN       | 29,326.3              | 40,853.2    | 54,400.5    | 22,380.5                   | 31,181.7    | 41,526.6    |
| PENNSYLVANIA | 42115 | SUSQUEHANNA    | 201,854.2             | 269,889.0   | 347,800.5   | 123,702.8                  | 164,750.6   | 211,581.9   |
| PENNSYLVANIA | 42117 | TIOGA          | 184,023.8             | 249,718.7   | 326,939.9   | 130,862.0                  | 177,509.3   | 232,306.2   |
| PENNSYLVANIA | 42119 | UNION          | 110,246.0             | 152,423.7   | 202,689.7   | 86,306.6                   | 119,276.2   | 158,569.0   |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

b. NITROGEN DELIVERED TO THE BAY

| STATE        | FIPS  | COUNTY       | TOTAL NITROGEN LOADED |             |             | NITROGEN TRANSPORTED (LBS) |             |             |
|--------------|-------|--------------|-----------------------|-------------|-------------|----------------------------|-------------|-------------|
|              |       |              | MIN                   | MEAN        | MAX         | MIN                        | MEAN        | MAX         |
|              |       |              | PENNSYLVANIA          | 42127       | WAYNE       | 6,492.2                    | 9,147.0     | 12,372.6    |
| PENNSYLVANIA | 42131 | WYOMING      | 150,281.4             | 201,404.9   | 259,952.4   | 99,080.1                   | 132,784.8   | 171,383.8   |
| PENNSYLVANIA | 42133 | YORK         | 828,377.2             | 1,220,304.8 | 1,713,806.4 | 734,635.4                  | 1,080,843.7 | 1,517,195.7 |
| VIRGINIA     | 51001 | ACCOMACK     | 77,923.2              | 119,654.3   | 171,891.4   | 78,009.7                   | 119,654.3   | 171,891.4   |
| VIRGINIA     | 51003 | ALBEMARLE    | 232,097.1             | 340,285.0   | 475,289.5   | 171,086.4                  | 250,786.1   | 350,230.3   |
| VIRGINIA     | 51005 | ALLEGHANY    | 43,814.0              | 72,237.0    | 109,966.6   | 27,661.2                   | 45,698.3    | 69,679.0    |
| VIRGINIA     | 51007 | AMELIA       | 47,101.7              | 71,604.2    | 101,946.2   | 21,120.2                   | 32,075.2    | 45,660.4    |
| VIRGINIA     | 51009 | AMHERST      | 132,054.9             | 194,878.4   | 271,798.0   | 96,113.8                   | 141,861.2   | 197,951.1   |
| VIRGINIA     | 51011 | APPOMATTOX   | 44,122.1              | 60,689.2    | 80,936.4    | 28,050.6                   | 38,158.0    | 50,257.3    |
| VIRGINIA     | 51013 | ARLINGTON    | 716.5                 | 12,212.5    | 35,122.7    | 716.5                      | 12,211.2    | 35,118.6    |
| VIRGINIA     | 51015 | AUGUSTA      | 236,751.4             | 355,386.5   | 504,205.0   | 162,566.4                  | 243,909.7   | 345,948.6   |
| VIRGINIA     | 51017 | BATH         | 14,623.8              | 27,939.1    | 45,401.6    | 7,487.8                    | 13,954.1    | 22,365.5    |
| VIRGINIA     | 51019 | BEDFORD      | 46,965.4              | 67,421.7    | 92,378.4    | 33,678.9                   | 48,299.9    | 66,140.9    |
| VIRGINIA     | 51023 | BOTETOURT    | 63,587.6              | 95,073.5    | 134,622.9   | 41,013.4                   | 61,321.4    | 86,330.3    |
| VIRGINIA     | 51029 | BUCKINGHAM   | 61,888.2              | 96,450.3    | 139,414.5   | 44,840.2                   | 69,881.4    | 101,025.8   |
| VIRGINIA     | 51031 | CAMPBELL     | 69,622.1              | 95,768.2    | 126,461.9   | 51,226.8                   | 70,464.8    | 93,048.8    |
| VIRGINIA     | 51033 | CAROLINE     | 98,477.8              | 149,045.4   | 211,615.7   | 61,658.2                   | 92,761.5    | 131,208.3   |
| VIRGINIA     | 51036 | CHARLES CITY | 37,285.0              | 55,423.3    | 77,685.7    | 37,285.0                   | 55,423.3    | 77,685.7    |
| VIRGINIA     | 51037 | CHARLOTTE    | 6.4                   | 9.9         | 14.2        | 2.8                        | 4.3         | 6.3         |
| VIRGINIA     | 51041 | CHESTERFIELD | 255,854.3             | 443,927.3   | 694,695.6   | 243,817.9                  | 427,529.7   | 673,183.7   |
| VIRGINIA     | 51043 | CLARKE       | 49,869.3              | 75,344.6    | 107,345.5   | 41,505.1                   | 62,699.2    | 89,319.7    |
| VIRGINIA     | 51045 | CRAIG        | 17,945.6              | 26,513.6    | 36,743.7    | 11,574.7                   | 17,100.9    | 23,699.3    |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
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OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                | b. NITROGEN DELIVERED TO THE BAY |           |           |                            |           |           |  |
|--|-------|----------------|----------------------------------|-----------|-----------|----------------------------|-----------|-----------|--|
|  |       |                | TOTAL NITROGEN LOADED            |           |           | NITROGEN TRANSPORTED (LBS) |           |           |  |
| STATE  | FIPS  | COUNTY         | MIN                              | MEAN      | MAX       | MIN                        | MEAN      | MAX       |  |
| VIRGINIA   | 51047 | CULPEPER       | 109,104.2                        | 165,863.1 | 236,281.7 | 99,412.2                   | 151,129.1 | 215,292.3 |  |
| VIRGINIA   | 51049 | CUMBERLAND     | 41,444.7                         | 65,029.5  | 94,588.1  | 26,242.0                   | 40,911.1  | 59,295.9  |  |
| VIRGINIA   | 51053 | DINWIDDIE      | 20,083.3                         | 30,118.0  | 42,588.3  | 14,310.6                   | 21,885.7  | 31,413.6  |  |
| VIRGINIA   | 51057 | ESSEX          | 40,511.1                         | 62,894.7  | 91,377.6  | 40,565.2                   | 62,892.1  | 91,374.1  |  |
| VIRGINIA   | 51059 | FAIRFAX        | 310,588.2                        | 542,305.2 | 871,900.9 | 294,317.8                  | 517,524.1 | 836,310.1 |  |
| VIRGINIA   | 51061 | FAUQUIER       | 227,553.6                        | 317,795.9 | 424,663.4 | 217,873.9                  | 304,279.8 | 406,613.4 |  |
| VIRGINIA   | 51065 | FLUVANNA       | 57,980.0                         | 86,298.9  | 121,059.6 | 42,681.1                   | 63,528.9  | 89,119.0  |  |
| VIRGINIA   | 51069 | FREDERICK      | 155,451.7                        | 240,600.6 | 350,219.2 | 126,085.3                  | 195,222.6 | 284,260.6 |  |
| VIRGINIA   | 51071 | GILES          | 1,939.2                          | 2,740.9   | 3,712.6   | 1,250.8                    | 1,767.8   | 2,394.6   |  |
| VIRGINIA   | 51073 | GLOUCESTER     | 176,108.2                        | 245,154.6 | 327,664.3 | 176,108.2                  | 245,154.7 | 327,664.2 |  |
| VIRGINIA   | 51075 | GOOCHLAND      | 75,451.3                         | 110,343.7 | 153,814.0 | 65,011.3                   | 94,995.0  | 132,363.3 |  |
| VIRGINIA   | 51079 | GREENE         | 55,650.4                         | 79,988.9  | 109,793.7 | 44,003.8                   | 63,467.4  | 87,369.7  |  |
| VIRGINIA   | 51085 | HANOVER        | 237,265.2                        | 354,292.3 | 500,562.5 | 221,862.8                  | 331,717.8 | 469,281.4 |  |
| VIRGINIA   | 51087 | HENRICO        | 111,655.5                        | 209,662.2 | 355,293.8 | 111,042.8                  | 207,605.7 | 350,960.4 |  |
| VIRGINIA   | 51091 | HIGHLAND       | 11,190.8                         | 20,490.3  | 32,445.5  | 6,098.0                    | 10,861.1  | 17,014.8  |  |
| VIRGINIA   | 51093 | ISLE OF WIGHT  | 77,380.6                         | 107,914.6 | 144,550.4 | 77,397.9                   | 107,914.6 | 144,550.4 |  |
| VIRGINIA   | 51095 | JAMES CITY     | 58,536.4                         | 93,954.9  | 139,739.2 | 58,824.4                   | 93,954.9  | 139,739.2 |  |
| VIRGINIA   | 51097 | KING AND QUEEN | 40,000.8                         | 55,563.0  | 73,900.3  | 38,895.8                   | 53,999.8  | 71,802.5  |  |
| VIRGINIA   | 51099 | KING GEORGE    | 60,559.7                         | 87,980.2  | 122,258.4 | 60,559.6                   | 87,980.1  | 122,258.4 |  |
| VIRGINIA   | 51101 | KING WILLIAM   | 49,364.8                         | 71,844.4  | 99,031.4  | 49,027.7                   | 71,300.9  | 98,262.6  |  |
| VIRGINIA   | 51103 | LANCASTER      | 57,354.0                         | 85,850.1  | 122,525.0 | 57,354.0                   | 85,850.1  | 122,525.0 |  |
| VIRGINIA   | 51107 | LOUDOUN        | 127,798.1                        | 96,926.7  | 286,541.5 | 113,175.0                  | 174,362.4 | 254,008.6 |  |

Table 12

**NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL. COUNTY SUMMARIES**

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                | b. NITROGEN DELIVERED TO THE BAY |           |           |           |                            |           |  |
|--|-------|----------------|----------------------------------|-----------|-----------|-----------|----------------------------|-----------|--|
|  |       |                | TOTAL NITROGEN LOADED            |           |           |           | NITROGEN TRANSPORTED (LBS) |           |  |
|  |       |                | MIN                              | MEAN      | MAX       | MIN       | MEAN                       | MAX       |  |
| STATE  | FIPS  | COUNTY         | MIN                              | MEAN      | MAX       | MIN       | MEAN                       | MAX       |  |
| VIRGINIA   | 51109 | LOUISA         | 110,860.0                        | 165,656.5 | 232,730.7 | 69,718.1  | 103,229.6                  | 144,121.7 |  |
| VIRGINIA   | 51111 | LUNENBERG      | 14.9                             | 21.1      | 28.4      | 6.6       | 9.3                        | 12.5      |  |
| VIRGINIA   | 51113 | MADISON        | 71,405.3                         | 100,231.5 | 134,191.9 | 65,062.3  | 91,327.7                   | 122,271.2 |  |
| VIRGINIA   | 51115 | MATHEWS        | 52,308.4                         | 71,406.4  | 93,442.4  | 52,308.5  | 71,406.4                   | 93,442.5  |  |
| VIRGINIA   | 51119 | MIDDLESEX      | 48,256.8                         | 69,396.2  | 96,218.3  | 48,256.8  | 69,396.1                   | 96,218.3  |  |
| VIRGINIA   | 51121 | MONTGOMERY     | 3,114.8                          | 4,575.6   | 6,315.3   | 2,009.0   | 2,951.2                    | 4,073.3   |  |
| VIRGINIA   | 51125 | NELSON         | 64,032.5                         | 102,537.0 | 150,974.8 | 47,112.2  | 75,441.9                   | 111,080.2 |  |
| VIRGINIA   | 51127 | NEW KENT       | 68,033.7                         | 90,401.2  | 116,458.3 | 68,033.8  | 90,401.3                   | 116,458.3 |  |
| VIRGINIA   | 51131 | NORTHAMPTON    | 36,071.3                         | 57,349.7  | 84,430.7  | 36,072.4  | 57,349.7                   | 84,430.8  |  |
| VIRGINIA   | 51133 | NORTHUMBERLAND | 59,791.4                         | 89,112.9  | 126,375.7 | 59,791.4  | 89,112.9                   | 126,375.7 |  |
| VIRGINIA   | 51135 | NOTTOWAY       | 23,398.9                         | 39,509.5  | 60,408.1  | 10,636.3  | 17,845.0                   | 27,181.2  |  |
| VIRGINIA   | 51137 | ORANCE         | 82,690.2                         | 121,558.7 | 169,389.6 | 49,746.6  | 74,029.8                   | 104,064.6 |  |
| VIRGINIA   | 51139 | PAGE           | 77,680.4                         | 119,441.8 | 174,195.9 | 53,823.6  | 82,711.9                   | 120,585.4 |  |
| VIRGINIA   | 51145 | POWHATAN       | 85,647.3                         | 116,230.6 | 152,826.9 | 66,770.3  | 90,679.9                   | 119,300.8 |  |
| VIRGINIA   | 51147 | PRINCE EDWARD  | 60,224.2                         | 91,228.2  | 130,091.3 | 26,461.2  | 40,083.7                   | 57,159.3  |  |
| VIRGINIA   | 51149 | PRINCE GEORGE  | 29,626.4                         | 44,180.5  | 62,744.3  | 29,626.4  | 44,180.5                   | 62,744.4  |  |
| VIRGINIA   | 51153 | PRINCE WILLIAM | 215,256.5                        | 323,742.8 | 467,511.1 | 215,461.7 | 323,728.4                  | 467,491.9 |  |
| VIRGINIA   | 51157 | RAPPAHANNOCK   | 35,674.4                         | 54,823.7  | 78,657.3  | 32,511.9  | 49,951.1                   | 71,666.2  |  |
| VIRGINIA   | 51159 | RICHMOND       | 34,966.8                         | 54,617.1  | 79,105.8  | 34,966.8  | 54,617.1                   | 79,105.8  |  |
| VIRGINIA   | 51161 | ROANOKE        | 6,948.1                          | 8,882.1   | 11,044.8  | 4,481.5   | 5,728.9                    | 7,123.8   |  |
| VIRGINIA   | 51163 | ROCKERIDGE     | 86,930.4                         | 134,865.2 | 196,089.6 | 56,069.2  | 86,986.8                   | 125,475.9 |  |
| VIRGINIA   | 51165 | ROCKINGHAM     | 247,292.7                        | 371,049.8 | 525,920.6 | 183,599.1 | 275,949.5                  | 391,535.0 |  |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
 COUNTY SUMMARIES  
 NCRI-CHESAPEAKE, Inc.

b. NITROGEN DELIVERED TO THE BAY

| STATE    | FIPS  | COUNTY           | TOTAL NITROGEN LOADED |           |           | NITROGEN TRANSPORTED (LBS) |           |           |
|----------|-------|------------------|-----------------------|-----------|-----------|----------------------------|-----------|-----------|
|          |       |                  | MIN                   | MEAN      | MAX       | MIN                        | MEAN      | MAX       |
| VIRGINIA | 51171 | SHENANDOAH       | 101,998.0             | 168,896.9 | 255,613.5 | 35,577.5                   | 141,426.1 | 214,189.5 |
| VIRGINIA | 51177 | SPOTSYLVANIA     | 152,717.1             | 230,263.9 | 326,955.3 | 90,869.1                   | 141,875.1 | 206,171.9 |
| VIRGINIA | 51179 | STAFFORD         | 151,072.2             | 230,140.5 | 331,571.6 | 149,414.5                  | 227,829.3 | 328,470.7 |
| VIRGINIA | 51181 | SURRY            | 15,453.5              | 23,620.2  | 33,711.2  | 15,453.5                   | 23,620.2  | 33,711.2  |
| VIRGINIA | 51187 | WARREN           | 89,569.7              | 129,580.8 | 179,712.6 | 71,523.8                   | 103,506.7 | 143,591.8 |
| VIRGINIA | 51193 | WESTMORELAND     | 71,664.9              | 108,938.4 | 156,246.7 | 71,712.9                   | 108,538.4 | 156,246.7 |
| VIRGINIA | 51199 | YORK             | 95,483.2              | 144,459.8 | 206,184.7 | 95,483.2                   | 144,459.8 | 206,184.6 |
| VIRGINIA | 51510 | ALEXANDRIA       | 264.0                 | 2,656.4   | 8,584.8   | 264.0                      | 2,656.4   | 8,584.8   |
| VIRGINIA | 51530 | BUENA VISTA      | -                     | 2,092.2   | 6,773.8   | -                          | 1,349.5   | 4,369.0   |
| VIRGINIA | 51540 | CHARLOTTESVILLE  | 447.7                 | 6,836.9   | 18,867.7  | 329.4                      | 5,030.5   | 13,882.5  |
| VIRGINIA | 51550 | CHESAPEAKE CITY  | 38,914.8              | 86,561.4  | 158,992.9 | 38,914.7                   | 86,461.3  | 158,993.0 |
| VIRGINIA | 51560 | CLIFTON FORGE    | -                     | 93.0      | 444.0     | -                          | 60.0      | 286.4     |
| VIRGINIA | 51570 | COLONIAL HEIGHTS | -                     | 404.5     | 1,641.6   | -                          | 404.5     | 1,641.6   |
| VIRGINIA | 51580 | COVINGTON        | -                     | 236.0     | 1,024.0   | -                          | 52.2      | 660.4     |
| VIRGINIA | 51600 | FAIRFAX          | 138.8                 | 2,304.4   | 6,055.5   | 138.8                      | 2,297.6   | 6,069.4   |
| VIRGINIA | 51610 | FALLS CHURCH     | -                     | 746.3     | 2,127.6   | -                          | 746.3     | 2,127.6   |
| VIRGINIA | 51630 | FREDERICKSBURG   | -                     | 1,614.2   | 5,389.2   | -                          | 1,504.3   | 5,362.0   |
| VIRGINIA | 51650 | HAMPTON CITY     | 3,803.2               | 24,744.6  | 60,732.1  | 3,803.2                    | 24,744.6  | 60,732.1  |
| VIRGINIA | 51660 | HARRISONBURG     | 2,310.7               | 10,032.2  | 21,537.2  | 1,594.9                    | 6,991.8   | 15,044.4  |
| VIRGINIA | 51670 | HOPEWELL         | 491.0                 | 4,781.1   | 13,340.1  | 491.0                      | 4,781.1   | 13,340.1  |
| VIRGINIA | 51678 | LEXINGTON        | -                     | 193.0     | 707.0     | -                          | 124.5     | 456.0     |
| VIRGINIA | 51680 | LYNCHBURG        | 57,196.7              | 97,136.1  | 151,780.5 | 42,084.5                   | 71,471.3  | 111,677.8 |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCR-CHESAPEAKE, Inc. |       |                     | b. NITROGEN DELIVERED TO THE BAY |           |           |                            |           |           |
|---|-------|---------------------|----------------------------------|-----------|-----------|----------------------------|-----------|-----------|
|   |       |                     | TOTAL NITROGEN LOADED            |           |           | NITROGEN TRANSPORTED (LBS) |           |           |
| STATE   | FIPS  | COUNTY              | MIN                              | MEAN      | MAX       | MIN                        | MEAN      | MAX       |
| VIRGINIA  | 51683 | MANASSES CITY       | 344.1                            | 3,692.6   | 9,459.1   | 344.1                      | 3,692.6   | 9,459.1   |
| VIRGINIA  | 51685 | MANASSES PARK CITY  | -                                | -         | -         | -                          | -         | -         |
| VIRGINIA  | 51700 | NEWPORT NEWS CITY   | 10,092.8                         | 42,228.8  | 93,664.3  | 10,092.8                   | 42,228.8  | 93,664.3  |
| VIRGINIA  | 51710 | NORFOLK CITY        | 850.1                            | 25,883.6  | 79,549.1  | 850.1                      | 25,883.6  | 79,549.1  |
| VIRGINIA  | 51730 | PETERSBURG          | 109.5                            | 2,750.5   | 8,792.6   | 109.5                      | 2,750.5   | 8,792.6   |
| VIRGINIA  | 51735 | POQUOSON            | 14,157.4                         | 27,411.2  | 45,144.2  | 14,157.4                   | 27,411.2  | 45,144.2  |
| VIRGINIA  | 51740 | PORTSMOUTH CITY     | 178.1                            | 11,605.9  | 33,511.4  | 178.1                      | 11,605.9  | 33,511.4  |
| VIRGINIA  | 51760 | RICHMOND CITY       | 9,593.7                          | 42,135.2  | 93,043.3  | 9,182.0                    | 41,230.8  | 96,457.1  |
| VIRGINIA  | 51790 | STAUNTON            | 418.4                            | 7,434.5   | 19,557.0  | 292.5                      | 5,130.5   | 13,496.2  |
| VIRGINIA  | 51800 | SUFFOLK CITY        | 111,703.9                        | 166,698.3 | 233,309.1 | 111,727.7                  | 156,698.4 | 233,309.0 |
| VIRGINIA  | 51810 | VIRGINIA BEACH CITY | 50,106.4                         | 106,797.2 | 192,519.3 | 50,106.4                   | 106,797.3 | 192,519.1 |
| VIRGINIA  | 51820 | WAYNESBORO          | 1,756.6                          | 10,201.6  | 23,822.1  | 1,212.2                    | 7,040.1   | 16,439.6  |
| VIRGINIA  | 51830 | WILLIAMSBURG        | 96.9                             | 2,485.3   | 7,466.5   | 96.9                       | 2,485.3   | 7,466.5   |
| VIRGINIA  | 51840 | WINCHESTER          | 1,247.6                          | 6,761.5   | 13,444.0  | 1,003.3                    | 5,437.5   | 12,420.0  |
| WEST VIRGINIA   | 54003 | BERKELEY            | 199,964.3                        | 300,814.0 | 426,965.8 | 160,975.3                  | 241,912.8 | 343,363.5 |
| WEST VIRGINIA   | 54023 | GRANT               | 42,025.6                         | 64,975.7  | 93,859.8  | 29,777.4                   | 45,991.9  | 66,401.0  |
| WEST VIRGINIA   | 54025 | GREENBRIAR          | 9.5                              | 19.1      | 32.6      | 5.7                        | 11.6      | 19.8      |
| WEST VIRGINIA   | 54027 | HAMPSHIRE           | 79,247.4                         | 123,329.5 | 179,395.7 | 60,062.3                   | 93,331.7  | 135,571.5 |
| WEST VIRGINIA   | 54031 | HARDY               | 42,388.0                         | 71,414.4  | 108,818.0 | 31,764.6                   | 53,497.0  | 81,502.4  |
| WEST VIRGINIA   | 54037 | JEFFERSON           | 132,649.8                        | 190,762.6 | 262,202.0 | 108,767.4                  | 156,459.6 | 215,200.2 |
| WEST VIRGINIA   | 54057 | MINERAL             | 76,738.4                         | 118,722.6 | 173,430.7 | 53,061.3                   | 82,091.3  | 119,919.4 |
| WEST VIRGINIA   | 54063 | MONROE              | 4,011.4                          | 6,607.6   | 9,876.7   | 2,587.3                    | 4,261.9   | 6,370.3   |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
 THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
 OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |            | b. NITROGEN DELIVERED TO THE BAY |                     |                     |                            |                     |                     |
|--|-------|------------|----------------------------------|---------------------|---------------------|----------------------------|---------------------|---------------------|
|  |       |            | TOTAL NITROGEN LOADED            |                     |                     | NITROGEN TRANSPORTED (LBS) |                     |                     |
| STATE  | FIPS  | COUNTY     | MIN                              | MEAN                | MAX                 | MIN                        | MEAN                | MAX                 |
| WEST VIRGINIA  | 54065 | MORGAN     | 56,328.0                         | 81,623.8            | 113,250.9           | 44,742.0                   | 64,748.9            | 89,745.4            |
| WEST VIRGINIA  | 54071 | PENDLETON  | 36,891.2                         | 60,862.2            | 90,938.4            | 26,488.0                   | 43,628.3            | 65,188.2            |
| WEST VIRGINIA  | 54075 | POCAHONTAS | 11.9                             | 20.4                | 31.5                | 3.6                        | 6.4                 | 10.2                |
| WEST VIRGINIA  | 54077 | PRESTON    | 304.2                            | 431.9               | 587.6               | 210.3                      | 298.6               | 406.3               |
| WEST VIRGINIA  | 54083 | RANDOLPH   | 10.3                             | 15.9                | 23.2                | 7.4                        | 11.4                | 16.6                |
| WEST VIRGINIA  | 54093 | TUCKER     | 11.8                             | 63.8                | 140.6               | 8.2                        | 44.2                | 97.3                |
| <b>Grand Total</b>   |       |            | <b>22,408,922.2</b>              | <b>33,473,566.8</b> | <b>47,777,554.8</b> | <b>18,451,118.6</b>        | <b>27,720,698.5</b> | <b>39,783,514.0</b> |

Table 12

**NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES**

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRJ-CHESAPEAKE, Inc. |       |                 | 4. Nitrogen   |           |           |           |           |           |          |           |           | TOTAL 4   |
|--|-------|-----------------|---------------|-----------|-----------|-----------|-----------|-----------|----------|-----------|-----------|-----------|
| a POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING SEPTIC FIELDS TO            |       |                 |               |           |           |           |           |           |          |           |           |           |
| GROUND WATER   |       |                 | SURFACE WATER |           |           | BAY WATER |           |           |          |           |           |           |
| STATE  | FIPS  | COUNTY          | MIN           | MEAN      | MAX       | MIN       | MEAN      | MAX       | MIN      | MEAN      | MAX       |           |
| DELAWARE   | 10001 | KENT            | 7.1           | 4.6       | 85.4      | 2.6       | 15.2      | 30.8      | -        | -         | -         | 56.7      |
| DELAWARE   | 10003 | NEW CASTLE      | 2,168.4       | 3,155.8   | 4,274.2   | 873.4     | 1,242.7   | 1,654.7   | -        | -         | -         | 4,398.8   |
| DELAWARE   | 10005 | SUSSEX          | 2,422.2       | 7,291.3   | 13,326.3  | 744.9     | 2,237.9   | 4,049.9   | 131.1    | 401.6     | 741.9     | 9,936.8   |
| DISTRICT OF COLUMBIA   | 11001 | WASHINGTON      | -             | 8,831.8   | 31,368.9  | -         | 2,996.7   | 10,582.8  | -        | 736.9     | 2,512.6   | 12,572.3  |
| MARYLAND   | 24001 | ALLEGANY        | 3,627.0       | 13,227.9  | 28,032.3  | 1,508.7   | 5,665.6   | 12,001.4  | -        | -         | -         | 18,893.5  |
| MARYLAND   | 24003 | ANNE ARUNDEL    | 248,761.0     | 391,081.9 | 573,725.8 | 66,678.8  | 104,083.3 | 152,062.2 | 95,257.5 | 140,804.8 | 198,147.2 | 635,972.1 |
| MARYLAND   | 24005 | BALTIMORE       | 89,042.0      | 184,308.2 | 327,307.6 | 29,678.0  | 60,691.6  | 106,464.9 | 17,055.1 | 29,610.7  | 48,155.8  | 274,602.5 |
| MARYLAND   | 24009 | CALVERT         | 20,940.9      | 26,361.3  | 32,135.9  | 8,143.8   | 10,078.1  | 12,134.7  | 8,052.2  | 10,288.9  | 12,738.2  | 46,735.3  |
| MARYLAND   | 24011 | CAROLINE        | 132.5         | 1,554.8   | 3,222.3   | 40.6      | 468.4     | 962.4     | 2.4      | 669.2     | 1,344.7   | 2,692.1   |
| MARYLAND   | 24013 | CARROLL         | 16,981.3      | 32,702.6  | 53,542.9  | 6353.2    | 11,938.1  | 19,256.9  | -        | -         | -         | 44,640.7  |
| MARYLAND   | 24015 | CECIL           | 2,556.4       | 6,859.3   | 12,330.4  | 861.4     | 2,272.4   | 4,091.8   | -        | 152.9     | 394.8     | 9,284.5   |
| MARYLAND   | 24017 | CHARLES         | 24,265.8      | 43,354.3  | 69,225.4  | 9062.8    | 15,963.6  | 25,225.5  | 14.2     | 220.8     | 631.1     | 59,540.7  |
| MARYLAND   | 24019 | DORCHESTER      | -             | 319.9     | 1,076.3   | -         | 106.8     | 357.8     | -        | 111.6     | 353.9     | 538.1     |
| MARYLAND   | 24021 | FREDERICK       | 80,701.8      | 124,254.9 | 178,281.9 | 27925.4   | 42,000.8  | 59,152.0  | -        | -         | -         | 166,255.7 |
| MARYLAND   | 24023 | GARRETT         | -             | -         | -         | -         | -         | -         | -        | -         | -         | -         |
| MARYLAND   | 24025 | HARFORD         | 84,082.2      | 139,321.2 | 209,359.4 | 26,421.6  | 43,021.0  | 63,872.5  | 564.2    | 2,052.9   | 4,344.3   | 184,399.1 |
| MARYLAND   | 24027 | HOWARD          | 13,935.8      | 47,241.2  | 98,170.2  | 4,717.2   | 15,814.7  | 32,564.5  | -        | -         | -         | 63,059.9  |
| MARYLAND   | 24029 | KENT            | 1,409.1       | 2,185.1   | 3,331.8   | 398.9     | 609.6     | 917.4     | 77.8     | 172.9     | 408.1     | 2,971.6   |
| MARYLAND   | 24031 | MONTGOMERY      | 56,481.6      | 133,979.0 | 248,382.7 | 20,646.8  | 47,553.7  | 86,736.8  | 36.9     | 257.0     | 739.4     | 181,789.7 |
| MARYLAND   | 24033 | PRINCE GEORGE'S | 27,880.0      | 100,757.0 | 216,395.7 | 9939.7    | 35,194.3  | 74,625.1  | 274.3    | 1,604.9   | 3,490.1   | 137,556.1 |
| MARYLAND   | 24035 | QUEEN ANNES     | -             | -         | -         | -         | -         | -         | -        | -         | -         | -         |
| MARYLAND   | 24037 | SAINT MARY'S    | 25,587.5      | 37,859.7  | 53,228.8  | 9,108.8   | 13,287.4  | 18,502.0  | 13,723.7 | 17,523.4  | 21,679.8  | 68,670.4  |
| MARYLAND   | 24039 | SOMERSET        | -             | 251.3     | 1,065.4   | -         | 93.9      | 394.1     | -        | 100.4     | 423.8     | 445.5     |
| MARYLAND   | 24041 | TALBOT          | 934.9         | 3,546.3   | 7,711.6   | 289.9     | 1,044.5   | 2,217.7   | 73.1     | 260.4     | 541.6     | 4,851.2   |
| MARYLAND   | 24043 | WASHINGTON      | 38,209.7      | 64,811.1  | 99,261.3  | 11,889.7  | 19,891.3  | 30,343.4  | -        | -         | -         | 84,704.4  |
| MARYLAND   | 24045 | WICOMICO        | 509.0         | 3,551.4   | 10,110.6  | 177.0     | 1,237.9   | 3,534.3   | -        | 251.8     | 666.1     | 5,045.1   |
| MARYLAND   | 24047 | WORCESTER       | -             | 840.0     | 2,134.7   | -         | 374.3     | 927.5     | -        | -         | -         | 1,214.4   |
| MARYLAND   | 24510 | BALTIMORE CITY  | 525.9         | 35,291.4  | 102,298.0 | 185.3     | 11,662.4  | 33,295.2  | -        | 680.5     | 2,061.0   | 47,638.1  |
| NEW YORK   | 36003 | ALLEGANY        | 1,215.0       | 1,921.1   | 2,992.8   | 587.7     | 1,618.0   | 1,409.1   | -        | -         | -         | 2,841.9   |
| NEW YORK   | 36007 | BROOME          | 41,852.1      | 73,946.2  | 118,765.8 | 27,506.2  | 45,610.6  | 70,370.8  | -        | -         | -         | 119,556.1 |
| NEW YORK   | 36011 | CAYUGA          | -             | -         | -         | -         | -         | -         | -        | -         | -         | -         |
| NEW YORK   | 36015 | CHEMUNG         | 47,194.1      | 73,171.1  | 107,170.9 | 21,308.4  | 33,198.3  | 48,979.0  | -        | -         | -         | 106,375.4 |
| NEW YORK   | 36017 | CHEMUNGO        | -             | 611.7     | 2,284.3   | -         | 291.4     | 1,058.6   | -        | -         | -         | 907.1     |
| NEW YORK   | 36023 | CORTLAND        | 2,393.1       | 6,051.2   | 12,099.9  | 1,311.7   | 3,234.0   | 6,395.0   | -        | -         | -         | 9,287.2   |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

4. Nitrogen

| a. POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING SEPTIC FIELDS TO |           |             |              |          |           |               |          |          |           |      |     | TOTAL <sup>4a</sup> |
|--|-----------|-------------|--------------|----------|-----------|---------------|----------|----------|-----------|------|-----|---------------------|
|  |           |             | GROUND WATER |          |           | SURFACE WATER |          |          | BAY WATER |      |     |                     |
| STATE  | FIPS      | COUNTY      | MIN          | MEAN     | MAX       | MIN           | MEAN     | MAX      | MIN       | MEAN | MAX |                     |
| NEW YORK   | 36025     | DELAWARE    | -            | 444.8    | 1,618.9   | -             | 124.2    | 146.7    | -         | -    | -   | 569.0               |
| NEW YORK   | 36043     | HERKIMER    | -            | -        | -         | -             | -        | -        | -         | -    | -   | -                   |
| NEW YORK   | 36051     | LIVINGSTON  | -            | -        | -         | -             | -        | -        | -         | -    | -   | -                   |
| NEW YORK   | 36053     | MADISON     | 6,303.0      | 9,081.4  | 12,389.6  | 2,758.1       | 3,911.6  | 5,277.5  | -         | -    | -   | 12,993.0            |
| NEW YORK   | 36065     | ONEIDA EAST | -            | 104.4    | 238.8     | -             | 31.5     | 87.1     | -         | -    | -   | 142.9               |
| NEW YORK   | 36067     | ONONDAGA    | -            | -        | -         | -             | -        | -        | -         | -    | -   | -                   |
| NEW YORK   | 36069     | ONTARIO     | -            | -        | -         | -             | -        | -        | -         | -    | -   | -                   |
| NEW YORK   | 36077     | OTSEGO      | -            | 912.6    | 3,034.2   | -             | 504.0    | 1,654.8  | -         | -    | -   | 1,416.6             |
| NEW YORK   | 36095     | SCHOHARIE   | -            | -        | -         | -             | -        | -        | -         | -    | -   | -                   |
| NEW YORK   | 36097     | SCHUYLER    | -            | -        | -         | -             | -        | -        | -         | -    | -   | -                   |
| NEW YORK   | 36101     | STEUBEN     | 403.1        | 2,988.9  | 8,444.4   | 136.4         | 1,274.2  | 3,770.6  | -         | -    | -   | 4,263.1             |
| NEW YORK   | 36107     | TIOGA       | 5,152.2      | 10,638.9 | 19,158.2  | 2,302.2       | 4,674.8  | 8,279.3  | -         | -    | -   | 15,313.7            |
| NEW YORK   | 36109     | TOMPKINS    | -            | -        | -         | -             | -        | -        | -         | -    | -   | -                   |
| NEW YORK   | 36123     | YATES       | -            | -        | -         | -             | -        | -        | -         | -    | -   | -                   |
| PENNSYLVANIA   | 42001     | ADAMS       | -            | 323.7    | 1,142.7   | -             | 103.4    | 161.9    | -         | -    | -   | 427.1               |
| PENNSYLVANIA   | 42009     | BEDFORD     | -            | -        | -         | -             | -        | -        | -         | -    | -   | -                   |
| PENNSYLVANIA   | 42011     | BERKS       | -            | 12.7     | 44.1      | -             | 4.7      | 15.8     | -         | -    | -   | 17.4                |
| PENNSYLVANIA   | 42,013.00 | BLAIR       | 15,860.6     | 35,677.0 | 68,021.4  | 6,304.3       | 14,058.3 | 26,522.8 | -         | -    | -   | 49,735.4            |
| PENNSYLVANIA   | 42015     | BRADFORD    | 2,193.3      | 6,650.8  | 13,457.2  | 737.0         | 2,284.4  | 4,693.2  | -         | -    | -   | 8,935.2             |
| PENNSYLVANIA   | 42021     | CAMBRIA     | -            | -        | -         | -             | -        | -        | -         | -    | -   | -                   |
| PENNSYLVANIA   | 42023     | CAMERON     | -            | 85.5     | 378.8     | -             | 28.0     | 122.4    | -         | -    | -   | 113.5               |
| PENNSYLVANIA   | 42025     | CARBON      | -            | -        | -         | -             | -        | -        | -         | -    | -   | -                   |
| PENNSYLVANIA   | 42027     | CENTRE      | 823.1        | 7,155.3  | 18,244.1  | 326.1         | 2,568.3  | 6,170.7  | -         | -    | -   | 9,723.6             |
| PENNSYLVANIA   | 42029     | CHESTER     | 1.6          | 815.3    | 2,159.1   | 0.1           | 283.9    | 743.0    | -         | -    | -   | 1,099.2             |
| PENNSYLVANIA   | 42033     | CLEARFIELD  | 93.2         | 1,951.0  | 5,088.6   | 39.1          | 831.2    | 2,143.1  | -         | -    | -   | 2,782.2             |
| PENNSYLVANIA   | 42035     | CLINTON     | -            | 117.8    | 458.3     | -             | 45.1     | 173.4    | -         | -    | -   | 162.9               |
| PENNSYLVANIA   | 42037     | COLUMBIA    | 224.2        | 4,033.7  | 11,111.2  | 98.7          | 1,755.7  | 4,107.2  | -         | -    | -   | 5,789.4             |
| PENNSYLVANIA   | 42041     | CUMBERLAND  | 14,248.7     | 38,053.1 | 73,421.5  | 5,305.1       | 13,561.4 | 25,338.4 | -         | -    | -   | 51,614.4            |
| PENNSYLVANIA   | 42043     | DAUPHIN     | 16,614.5     | 50,277.9 | 102,478.0 | 6,456.1       | 19,301.9 | 39,018.4 | -         | -    | -   | 69,579.8            |
| PENNSYLVANIA   | 42047     | ELK         | -            | -        | -         | -             | -        | -        | -         | -    | -   | -                   |
| PENNSYLVANIA   | 42055     | FRANKLIN    | 359.9        | 4,144.4  | 10,908.6  | 133.2         | 1,426.1  | 3,669.3  | -         | -    | -   | 5,570.5             |
| PENNSYLVANIA   | 42057     | FULTON      | -            | -        | -         | -             | -        | -        | -         | -    | -   | -                   |
| PENNSYLVANIA   | 42061     | HUNTINGDON  | -            | -        | -         | -             | -        | -        | -         | -    | -   | -                   |
| PENNSYLVANIA   | 42063     | INDIANA     | -            | -        | -         | -             | -        | -        | -         | -    | -   | -                   |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc |       |                |          |           |           |          |          |          |     |       |       | 4. Nitrogen |
|--|-------|----------------|----------|-----------|-----------|----------|----------|----------|-----|-------|-------|-------------|
| POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING SEPTIC FIELDS TO          |       |                |          |           |           |          |          |          |     |       |       | TOTAL #     |
| GROUND WATER   |       |                |          |           |           |          |          |          |     |       |       |             |
| STATE  | FIPS  | COUNTY         | MIN      | MEAN      | MAX       | MIN      | MEAN     | MAX      | MIN | MEAN  | MAX   |             |
| PENNSYLVANIA   | 42045 | JEFFERSON      | -        | -         | -         | -        | -        | -        | -   | -     | -     | -           |
| PENNSYLVANIA   | 42067 | JUNIATA        | -        | -         | -         | -        | -        | -        | -   | -     | -     | -           |
| PENNSYLVANIA   | 42069 | LACKAWANNA     | 3,147.0  | 16,715.7  | 42,253.0  | 1,703.8  | 9,114.5  | 22,997.0 | -   | -     | -     | -           |
| PENNSYLVANIA   | 42071 | LANCASTER      | 17,933.9 | 57,921.5  | 121,092.2 | 5,868.5  | 18,760.7 | 38,871.5 | -   | -     | -     | 25,830.2    |
| PENNSYLVANIA   | 42075 | LEBANON        | 12,662.2 | 21,469.0  | 33,462.7  | 4,491.8  | 7,422.4  | 11,355.5 | -   | -     | -     | 76,688.2    |
| PENNSYLVANIA   | 42079 | LUZERNE        | 33,294.8 | 70,811.5  | 129,628.0 | 14,688.5 | 31,957.6 | 58,748.2 | -   | -     | -     | 28,891.4    |
| PENNSYLVANIA   | 42081 | LYCOMING       | 30,037.2 | 45,368.8  | 66,730.2  | 12,393.1 | 18,567.5 | 27,267.7 | -   | -     | -     | 102,775.2   |
| PENNSYLVANIA   | 42083 | MCKEAN         | -        | -         | -         | -        | -        | -        | -   | -     | -     | 63,934.3    |
| PENNSYLVANIA   | 42087 | MIFFLIN        | -        | 504.7     | 1,699.5   | -        | 180.8    | 597.5    | -   | -     | -     | -           |
| PENNSYLVANIA   | 42091 | MONTOUR        | -        | 714.8     | 2,210.4   | -        | 277.8    | 861.4    | -   | -     | -     | 687.5       |
| PENNSYLVANIA   | 42097 | NORTHUMBERLAND | -        | 1,954.5   | 6,798.5   | -        | 807.1    | 2,758.1  | -   | -     | -     | 992.5       |
| PENNSYLVANIA   | 42099 | PERRY          | -        | 592.3     | 1,799.5   | -        | 341.4    | 1,005.9  | -   | -     | -     | 2,761.6     |
| PENNSYLVANIA   | 42105 | POTTER         | -        | -         | -         | -        | -        | -        | -   | -     | -     | 938.7       |
| PENNSYLVANIA   | 42107 | SCHUYLKILL     | -        | 1,193.7   | 3,845.4   | -        | 507.6    | 1,613.3  | -   | -     | -     | -           |
| PENNSYLVANIA   | 42109 | SNYDER         | -        | 325.7     | 1,050.7   | -        | 223.9    | 685.1    | -   | -     | -     | 1,701.0     |
| PENNSYLVANIA   | 42111 | SOMERSET       | -        | -         | -         | -        | -        | -        | -   | -     | -     | 549.6       |
| PENNSYLVANIA   | 42113 | SULLIVAN       | -        | -         | -         | -        | -        | -        | -   | -     | -     | -           |
| PENNSYLVANIA   | 42115 | SUSQUEHANNA    | -        | -         | -         | -        | -        | -        | -   | -     | -     | -           |
| PENNSYLVANIA   | 42117 | TIOGA          | 132.7    | 1,465.3   | 4,127.7   | 63.9     | 661.8    | 1,818.4  | -   | -     | -     | -           |
| PENNSYLVANIA   | 42119 | UNION          | -        | 369.2     | 1,264.8   | -        | 139.2    | 468.3    | -   | -     | -     | 2,127.1     |
| PENNSYLVANIA   | 42127 | WAYNE          | -        | -         | -         | -        | -        | -        | -   | -     | -     | 508.4       |
| PENNSYLVANIA   | 42131 | WYOMING        | -        | -         | -         | -        | -        | -        | -   | -     | -     | -           |
| PENNSYLVANIA   | 42133 | YORK           | 55,143.0 | 110,795.0 | 189,970.9 | 19,219.3 | 37,611.3 | 63,353.8 | -   | -     | -     | -           |
| VIRGINIA   | 51001 | ACCOMACK       | -        | -         | -         | -        | -        | -        | -   | -     | -     | 148,406.3   |
| VIRGINIA   | 51003 | ALBEMARLE      | 13,284.8 | 28,008.3  | 48,005.9  | 4,490.3  | 9,292.0  | 15,726.9 | -   | -     | -     | -           |
| VIRGINIA   | 51005 | ALLEGHANY      | -        | -         | -         | -        | -        | -        | -   | -     | -     | 37,300.3    |
| VIRGINIA   | 51007 | AMELIA         | -        | -         | -         | -        | -        | -        | -   | -     | -     | -           |
| VIRGINIA   | 51009 | AMHERST        | 41,107.8 | 57,196.1  | 76,160.6  | 12,784.6 | 17,558.0 | 23,177.6 | -   | -     | -     | -           |
| VIRGINIA   | 51011 | APPOMATTOX     | -        | -         | -         | -        | -        | -        | -   | -     | -     | 74,754.1    |
| VIRGINIA   | 51013 | ARLINGTON      | 549.8    | 6,308.0   | 17,495.5  | 166.7    | 1,818.1  | 4,972.0  | -   | -     | -     | -           |
| VIRGINIA   | 51015 | AUGUSTA        | 13,431.8 | 22,312.6  | 33,509.2  | 5,273.2  | 8,623.7  | 12,804.6 | -   | 275.5 | 788.7 | 8,401.6     |
| VIRGINIA   | 51017 | BATH           | -        | -         | -         | -        | -        | -        | -   | -     | -     | 30,936.3    |
| VIRGINIA   | 51019 | BEDFORD        | 17,347.8 | 22,477.4  | 28,173.5  | 5,193.7  | 6,625.1  | 8,215.0  | -   | -     | -     | -           |
| VIRGINIA   | 51023 | BOTETOURT      | 216.2    | 256.4     | 297.0     | 111.8    | 130.4    | 149.4    | -   | -     | -     | 29,102.6    |
|  |       |                |          |           |           |          |          |          |     |       |       | 386.8       |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                | 4. Nitrogen  |           |           |               |          |           |           |          |          | TOTAL     |
|--|-------|----------------|--------------|-----------|-----------|---------------|----------|-----------|-----------|----------|----------|-----------|
| a. POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING SEPTIC FIELDS TO           |       |                |              |           |           |               |          |           |           |          |          |           |
| STATE  | FIPS  | COUNTY         | GROUND WATER |           |           | SURFACE WATER |          |           | BAY WATER |          |          |           |
|  |       |                | MIN          | MEAN      | MAX       | MIN           | MEAN     | MAX       | MIN       | MEAN     | MAX      |           |
| VIRGINIA   | 51029 | BUCKINGHAM     | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51031 | CAMPBELL       | 21,310.2     | 30,470.3  | 40,861.2  | 6,474.1       | 9,386.7  | 12,034.1  | -         | -        | -        | 39,557.0  |
| VIRGINIA   | 51033 | CAROLINE       | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51036 | CHARLES CITY   | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51037 | CHARLOTTE      | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51041 | CHESTERFIELD   | 69,951.6     | 159,227.8 | 280,210.3 | 21,621.4      | 49,307.9 | 85,676.5  | 119.2     | 530.7    | 1,015.2  | 208,766.4 |
| VIRGINIA   | 51043 | CLARKE         | 865.1        | 2,117.7   | 4,050.2   | 270.7         | 554.1    | 1,239.8   | -         | -        | -        | 2,771.8   |
| VIRGINIA   | 51045 | CRAIG          | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51047 | CULPEPER       | 1,328.5      | 5,129.4   | 9,847.4   | 445.5         | 1,563.7  | 3,142.7   | -         | -        | -        | 6,793.1   |
| VIRGINIA   | 51049 | CUMBERLAND     | -            | 250.7     | 767.3     | -             | 59.7     | 188.0     | -         | -        | -        | 310.4     |
| VIRGINIA   | 51053 | DINWIDDIE      | 7.4          | 850.0     | 2,031.0   | 1.4           | 159.9    | 374.7     | -         | -        | -        | 1,009.9   |
| VIRGINIA   | 51057 | ESSEX          | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51059 | FAIRFAX        | 158,229.0    | 286,685.4 | 467,641.9 | 56,572.5      | 98,756.4 | 157,156.4 | 1,038.0   | 2,848.8  | 5,678.5  | 388,290.6 |
| VIRGINIA   | 51061 | FAUQUIER       | 386.2        | 2,450.7   | 5,301.3   | 116.0         | 1,145.9  | 2,443.4   | -         | -        | -        | 3,596.6   |
| VIRGINIA   | 51065 | FLUVANNA       | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51069 | FREDERICK      | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51071 | GILES          | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51073 | GLOUCESTER     | 22,656.7     | 30,559.9  | 39,367.5  | 8,394.3       | 11,196.8 | 14,302.4  | 20,395.8  | 27,534.6 | 35,506.3 | 69,291.3  |
| VIRGINIA   | 51075 | GOOCHLAND      | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51079 | GREENE         | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51085 | HANOVER        | 41,291.1     | 70,437.6  | 107,219.1 | 13,764.7      | 23,160.3 | 34,964.1  | -         | -        | -        | 93,597.9  |
| VIRGINIA   | 51087 | HENRICO        | 12,617.3     | 55,240.6  | 123,901.9 | 4,225.2       | 17,339.7 | 37,835.1  | 38.9      | 108.4    | 199.5    | 72,688.7  |
| VIRGINIA   | 51091 | HIGHLAND       | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51093 | ISLE OF WIGHT  | 1,346.2      | 3,121.9   | 5,362.9   | 497.6         | 1,151.7  | 1,968.9   | 268.9     | 628.3    | 1,078.8  | 4,901.9   |
| VIRGINIA   | 51095 | JAMES CITY     | 1,651.3      | 6,561.2   | 13,689.1  | 721.1         | 2,738.0  | 5,595.9   | 70.4      | 258.4    | 515.8    | 9,557.6   |
| VIRGINIA   | 51097 | KING AND QUEEN | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51099 | KING GEORGE    | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51101 | KING WILLIAM   | 492.1        | 1,192.0   | 2,211.6   | 259.5         | 605.6    | 1,094.9   | 177.4     | 494.8    | 998.4    | 2,292.5   |
| VIRGINIA   | 51103 | LANCASTER      | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51107 | LOUDOUN        | 2,934.2      | 9,213.8   | 18,840.2  | 1,011.7       | 3,046.2  | 6,095.4   | -         | -        | -        | 12,260.0  |
| VIRGINIA   | 51109 | LOUISA         | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51111 | LUNENBERG      | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51113 | MADISON        | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51115 | MATHEWS        | -            | -         | -         | -             | -        | -         | -         | -        | -        | -         |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCR-CHESAPEAKE, Inc.

4. Nitrogen

a. POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING SEPTIC FIELDS TO

| STATE    | FIPS  | COUNTY           | GROUND WATER |          |          | SURFACE WATER |          |          | BAY WATER |          |          | TOTAL 4a |
|----------|-------|------------------|--------------|----------|----------|---------------|----------|----------|-----------|----------|----------|----------|
|          |       |                  | MIN          | MEAN     | MAX      | MIN           | MEAN     | MAX      | MIN       | MEAN     | MAX      |          |
| VIRGINIA | 51119 | MIDDLESEX        | -            | -        | -        | -             | -        | -        | -         | -        | -        | -        |
| VIRGINIA | 51121 | MONTGOMERY       | -            | -        | -        | -             | -        | -        | -         | -        | -        | -        |
| VIRGINIA | 51125 | NELSON           | -            | -        | -        | -             | -        | -        | -         | -        | -        | -        |
| VIRGINIA | 51127 | NEW KENT         | -            | -        | -        | -             | -        | -        | -         | -        | -        | -        |
| VIRGINIA | 51131 | NORTHAMPTON      | -            | -        | -        | -             | -        | -        | -         | -        | -        | -        |
| VIRGINIA | 51133 | NORTHUMBERLAND   | -            | -        | -        | -             | -        | -        | -         | -        | -        | -        |
| VIRGINIA | 51135 | NOTTOWAY         | -            | -        | -        | -             | -        | -        | -         | -        | -        | -        |
| VIRGINIA | 51137 | ORANGE           | -            | 76.3     | 328.8    | -             | 15.6     | 66.5     | -         | -        | -        | -        |
| VIRGINIA | 51139 | PAGE             | 1,260.3      | 636.1    | 1,720.6  | -             | 209.9    | 557.5    | -         | -        | -        | 91.9     |
| VIRGINIA | 51145 | POWHATAN         | -            | 2,712.2  | 5,177.1  | 513.0         | 1,074.5  | 2,034.1  | -         | -        | -        | 846.0    |
| VIRGINIA | 51147 | PRINCE EDWARD    | -            | -        | -        | -             | -        | -        | -         | -        | -        | 3,786.7  |
| VIRGINIA | 51149 | PRINCE GEORGE    | 363.5        | 1,018.8  | 4,304.5  | 158.4         | 928.0    | 1,968.0  | -         | -        | -        | -        |
| VIRGINIA | 51153 | PRINCE WILLIAM   | 2,666.0      | 4,095.2  | 6,033.6  | 848.7         | 1,289.6  | 1,896.6  | -         | -        | -        | 2,946.8  |
| VIRGINIA | 51157 | RAPPAHANNOCK     | 3,256.5      | 22,708.0 | 54,844.3 | 954.3         | 6,833.4  | 16,496.5 | -         | 29       | 12.4     | 5,387.6  |
| VIRGINIA | 51159 | RICHMOND         | -            | -        | -        | -             | -        | -        | 631.2     | 1,717.5  | 3,262.8  | 31,258.9 |
| VIRGINIA | 51161 | ROANOKE          | -            | -        | -        | -             | -        | -        | -         | -        | -        | -        |
| VIRGINIA | 51163 | ROCKBRIDGE       | -            | -        | -        | -             | -        | -        | -         | -        | -        | -        |
| VIRGINIA | 51165 | ROCKINGHAM       | -            | -        | -        | -             | -        | -        | -         | -        | -        | -        |
| VIRGINIA | 51171 | SHENANDOAH       | 311.5        | 1,292.3  | 2,327.2  | 149.2         | 497.2    | 885.3    | -         | -        | -        | -        |
| VIRGINIA | 51177 | SPOTSYLVANIA     | 1,247.5      | 4,508.5  | 8,541.9  | 443.9         | 1,604.9  | 3,010.6  | -         | -        | -        | 1,789.4  |
| VIRGINIA | 51179 | STAFFORD         | 3,734.0      | 11,341.8 | 21,856.9 | 1,254.2       | 3,846.6  | 7,369.1  | -         | -        | -        | 6,113.4  |
| VIRGINIA | 51181 | SURRY            | 4,487.9      | 12,577.6 | 23,931.0 | 1,787.9       | 4,863.6  | 9,111.4  | -         | 88.4     | 251.9    | 15,176.4 |
| VIRGINIA | 51187 | WARREN           | -            | -        | -        | -             | -        | -        | 619.6     | 1,591.5  | 2,899.8  | 19,032.8 |
| VIRGINIA | 51193 | WESTMORELAND     | 1,759.4      | 5,398.0  | 10,543.4 | 822.1         | 2,467.8  | 4,720.8  | -         | -        | -        | -        |
| VIRGINIA | 51199 | YORK             | 146.8        | 669.1    | 1,477.0  | 81.6          | 367.4    | 803.2    | -         | -        | -        | 7,165.9  |
| VIRGINIA | 51510 | ALEXANDRIA       | 19,112.1     | 33,032.0 | 51,346.4 | 9,878.6       | 16,667.4 | 25,562.5 | 258.4     | 1,283.0  | 2,767.5  | 2,319.5  |
| VIRGINIA | 51530 | BUENA VISTA      | -            | 456.6    | 2,247.5  | -             | 119.2    | 580.0    | 17,945.6  | 25,344.9 | 34,016.0 | 75,044.4 |
| VIRGINIA | 51540 | CHARLOTTESVILLE  | -            | 1,095.7  | 3,348.8  | -             | 494.3    | 1,495.2  | -         | -        | -        | 575.7    |
| VIRGINIA | 51550 | CHESAPEAKE CITY  | 336.1        | 3,998.4  | 10,930.7 | 111.7         | 1,308.4  | 3,536.7  | -         | -        | -        | 1,590.0  |
| VIRGINIA | 51560 | CLIFTON FORGE    | 24,966.1     | 53,326.1 | 94,316.8 | 13,361.6      | 27,526.8 | 47,767.4 | -         | -        | -        | 5,306.8  |
| VIRGINIA | 51570 | COLONIAL HEIGHTS | -            | 62.0     | 297.0    | -             | 31.0     | 147.0    | 312.5     | 2,086.5  | 5,167.2  | 82,939.4 |
| VIRGINIA | 51580 | COVINGTON        | -            | 270.3    | 1,093.2  | -             | 134.2    | 548.4    | -         | -        | -        | 93.0     |
| VIRGINIA | 51600 | FAIRFAX          | -            | 169.3    | 736.4    | -             | 66.7     | 287.5    | -         | -        | -        | 404.5    |
| VIRGINIA | 51610 | FALLS CHURCH     | 102.3        | 1,523.3  | 4,157.2  | 36.5          | 567.9    | 1,435.3  | -         | -        | -        | 216.0    |
| VIRGINIA | 51610 | FALLS CHURCH     | -            | 119.2    | 473.5    | -             | 35.6     | 139.6    | -         | -        | -        | 2,191.2  |
|          |       |                  |              |          |          |               |          |          |           |          |          | 154.8    |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc

4. Nitrogen

1 POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING SEPTIC FIELDS TO  
GROUND WATER SURFACE WATER BAY WATER

| STATE         | FIPS  | COUNTY              | GROUND WATER |          |           | SURFACE WATER |          |          | BAY WATER |          |          | TOTAL 4a  |
|---------------|-------|---------------------|--------------|----------|-----------|---------------|----------|----------|-----------|----------|----------|-----------|
|               |       |                     | MIN          | MEAN     | MAX       | MIN           | MEAN     | MAX      | MIN       | MEAN     | MAX      |           |
| VIRGINIA      | 51630 | FREDERICKSBURG      | -            | 1,015.3  | 3,318.3   | -             | 416.3    | 1,323.3  | -         | 73.6     | 255.6    | 1,505.2   |
| VIRGINIA      | 51650 | HAMPTON CITY        | 1,888.5      | 10,801.9 | 26,088.1  | 1,097.8       | 6,296.6  | 15,057.4 | 816.9     | 4,117.5  | 9,498.0  | 21,218.1  |
| VIRGINIA      | 51660 | HARRISONBURG        | 1,677.8      | 7,062.7  | 14,799.0  | 632.9         | 2,622.7  | 5,434.6  | -         | -        | -        | 9,625.4   |
| VIRGINIA      | 51670 | HOPEWELL            | -            | 1,991.8  | 6,403.6   | -             | 658.3    | 2,093.9  | -         | 2.8      | 11.6     | 2,652.9   |
| VIRGINIA      | 51678 | LEXINGTON           | -            | 140.7    | 516.9     | -             | 52.3     | 190.1    | -         | -        | -        | 193.0     |
| VIRGINIA      | 51680 | LYNCHBURG           | 43,550.4     | 73,482.6 | 113,769.2 | 13,646.3      | 22,752.6 | 34,946.3 | -         | -        | -        | 96,235.3  |
| VIRGINIA      | 51683 | MANASSES CITY       | 264.4        | 2,661.0  | 6,736.3   | 79.7          | 790.2    | 1,979.3  | -         | -        | -        | 3,451.2   |
| VIRGINIA      | 51685 | MANASSES PARK CITY  | -            | -        | -         | -             | -        | -        | -         | -        | -        | -         |
| VIRGINIA      | 51703 | NEWPORT NEWS CITY   | 5,588.1      | 22,574.3 | 49,049.0  | 2,691.7       | 10,691.3 | 23,006.2 | 1,624.2   | 5,627.0  | 11,367.0 | 38,892.5  |
| VIRGINIA      | 51710 | NORFOLK CITY        | 466.5        | 9,922.8  | 30,360.1  | 174.7         | 5,140.2  | 15,856.1 | 60.7      | 3,875.8  | 11,965.3 | 18,938.1  |
| VIRGINIA      | 51730 | PETERSBURG          | 81.7         | 1,553.1  | 4,715.7   | 27.8          | 485.0    | 1,447.4  | -         | -        | -        | 2,038.0   |
| VIRGINIA      | 51735 | POQUOSON            | 3,321.0      | 7,352.7  | 12,960.3  | 1,929.6       | 4,213.2  | 7,344.1  | 8,906.8   | 15,744.7 | 24,370.6 | 27,310.6  |
| VIRGINIA      | 51740 | PORTSMOUTH CITY     | 74.4         | 3,954.7  | 13,248.9  | 39.2          | 2,126.0  | 7,054.5  | 64.5      | 1,039.6  | 2,947.6  | 7,120.3   |
| VIRGINIA      | 51760 | RICHMOND CITY       | 7,589.2      | 27,773.9 | 60,352.6  | 1,935.1       | 7,871.2  | 17,622.2 | -         | 100.1    | 300.2    | 35,745.2  |
| VIRGINIA      | 51790 | STAUNTON            | 299.8        | 4,273.9  | 10,730.7  | 118.6         | 1,599.0  | 3,957.4  | -         | -        | -        | 5,872.9   |
| VIRGINIA      | 51800 | SUFFOLK CITY        | 50,125.6     | 71,937.7 | 98,624.9  | 23,023.7      | 32,627.9 | 44,343.7 | 11,894.1  | 15,445.4 | 19,380.5 | 120,011.0 |
| VIRGINIA      | 51810 | VIRGINIA BEACH CITY | 29,962.1     | 62,844.9 | 111,288.4 | 12,337.0      | 26,072.8 | 46,645.6 | 7,907.4   | 14,611.4 | 23,633.2 | 103,529.1 |
| VIRGINIA      | 51820 | WAYNESBORO          | 1,268.7      | 6,741.8  | 15,108.6  | 487.9         | 2,578.1  | 5,724.3  | -         | -        | -        | 9,319.5   |
| VIRGINIA      | 51830 | WILLIAMSBURG        | 68.3         | 1,694.0  | 4,995.2   | 28.6          | 706.3    | 2,051.4  | -         | -        | -        | 2,400.2   |
| VIRGINIA      | 51840 | WINCHESTER          | 945.3        | 5,138.6  | 11,773.3  | 302.3         | 1,622.9  | 3,670.7  | -         | -        | -        | 6,761.5   |
| WEST VIRGINIA | 54001 | BERKELEY            | 2,839.0      | 4,944.3  | 8,739.7   | 1,125.7       | 1,717.5  | 2,734.6  | -         | -        | -        | 6,661.1   |
| WEST VIRGINIA | 54021 | GRANT               | -            | -        | -         | -             | -        | -        | -         | -        | -        | -         |
| WEST VIRGINIA | 54022 | GREENBRIAR          | -            | 19       | 3.8       | -             | 1.0      | 1.9      | -         | -        | -        | 2.5       |
| WEST VIRGINIA | 54027 | HAMPSHIRE           | -            | -        | -         | -             | -        | -        | -         | -        | -        | -         |
| WEST VIRGINIA | 54031 | HARDY               | -            | -        | -         | -             | -        | -        | -         | -        | -        | -         |
| WEST VIRGINIA | 54037 | JEFFERSON           | 14.1         | 1,341.6  | 3,670.9   | 4.4           | 412.0    | 1,114.5  | -         | -        | -        | 1,753.6   |
| WEST VIRGINIA | 54051 | MINERAL             | 5,848.6      | 9,902.3  | 15,267.0  | 2,139.2       | 4,806.4  | 7,417.9  | -         | -        | -        | 14,708.7  |
| WEST VIRGINIA | 54063 | MONROE              | -            | -        | -         | -             | -        | -        | -         | -        | -        | -         |
| WEST VIRGINIA | 54065 | MORGAN              | -            | -        | -         | -             | -        | -        | -         | -        | -        | -         |
| WEST VIRGINIA | 54071 | PENDLETON           | -            | -        | -         | -             | -        | -        | -         | -        | -        | -         |
| WEST VIRGINIA | 54075 | POCAHONTAS          | -            | -        | -         | -             | -        | -        | -         | -        | -        | -         |
| WEST VIRGINIA | 54077 | PRESTON             | -            | -        | -         | -             | -        | -        | -         | -        | -        | -         |
| WEST VIRGINIA | 54083 | RANDOLPH            | -            | -        | -         | -             | -        | -        | -         | -        | -        | -         |
| WEST VIRGINIA | 54093 | TUCKER              | -            | -        | -         | -             | -        | -        | -         | -        | -        | -         |

Table 12

**NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES**

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCR/CHESAPEAKE, Inc. |      |        | 4. Nitrogen  |             |             |               |             |             |           |           |           |             |
|---|------|--------|--------------|-------------|-------------|---------------|-------------|-------------|-----------|-----------|-----------|-------------|
| a. POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING SEPTIC FIELDS TO          |      |        |              |             |             |               |             |             |           |           |           |             |
|   |      |        | GROUND WATER |             |             | SURFACE WATER |             |             | BAY WATER |           |           | TOTAL 4a    |
| STATE   | FIPS | COUNTY | MIN          | MEAN        | MAX         | MIN           | MEAN        | MAX         | MIN       | MEAN      | MAX       |             |
| Grand Total   |      |        | 1,689,212.9  | 3,313,789.1 | 1,838,836.9 | 604,679.6     | 1,197,179.9 | 2,060,863.6 | 208,413.1 | 331,331.6 | 497,252.9 | 4,902,302.6 |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                 | b. POUNDS OF NITROGEN LOADED BY RURAL NONFARM POPULATIONS USING SEPTIC TO: |           |           |               |           |           |           |          |          | TOTAL #   |
|--|-------|-----------------|--|-----------|-----------|---------------|-----------|-----------|-----------|----------|----------|-----------|
| STATE  | FIPS  | COUNTY          | ROUND WATER  |           |           | SURFACE WATER |           |           | BAY WATER |          |          |           |
|  |       |                 | MIN  | MEAN      | MAX       | MIN           | MEAN      | MAX       | MIN       | MEAN     | MAX      |           |
| DELAWARE   | 10001 | KENT            | 10,981.5   | 88,603.7  | 106,818.4 | 25,111.6      | 30,873.4  | 36,813.7  | -         | -        | -        | 119,477.1 |
| DELAWARE   | 10003 | NEW CASTLE      | 16,610.5   | 20,932.3  | 25,493.7  | 5,731.3       | 7,103.3   | 8,551.5   | 353.8     | 431.1    | 511.7    | 28,466.1  |
| DELAWARE   | 10005 | SUSSEX          | 112,068.1  | 196,074.1 | 243,707.1 | 47,760.0      | 60,566.8  | 74,432.1  | 5,147.2   | 6,749.4  | 8,531.6  | 263,390.1 |
| DISTRICT OF COLUMBIA   | 11001 | WASHINGTON      | -  | -         | -         | -             | -         | -         | -         | -        | -        | -         |
| MARYLAND   | 24001 | ALLEGANY        | 35,016.4   | 60,897.4  | 93,024.0  | 16,218.1      | 27,373.9  | 41,044.9  | -         | -        | -        | 88,271.3  |
| MARYLAND   | 24003 | ANNE ARUNDEL    | 161,315.2  | 208,616.4 | 259,653.0 | 50,797.7      | 64,582.5  | 79,472.6  | 31,062.2  | 41,493.5 | 52,851.4 | 314,692.4 |
| MARYLAND   | 24005 | BALTIMORE       | 275,347.7  | 348,645.9 | 424,882.4 | 97,810.3      | 121,765.1 | 146,661.0 | 4,784.0   | 6,180.7  | 7,670.1  | 476,591.7 |
| MARYLAND   | 24009 | CALVERT         | 159,771.5  | 221,005.3 | 274,441.4 | 62,869.1      | 80,541.4  | 98,916.3  | 27,300.6  | 35,923.7 | 45,273.6 | 337,470.4 |
| MARYLAND   | 24011 | CAROLINE        | 75,829.0   | 98,610.0  | 124,278.8 | 24,643.4      | 31,529.3  | 39,286.8  | 5,274.7   | 6,788.1  | 8,568.6  | 136,927.3 |
| MARYLAND   | 24013 | CARROLL         | 346,908.7  | 449,714.5 | 559,125.0 | 130,319.0     | 166,234.2 | 204,358.8 | -         | -        | -        | 615,948.7 |
| MARYLAND   | 24015 | CECIL           | 171,056.5  | 232,905.2 | 302,070.2 | 56,271.1      | 75,276.9  | 96,432.3  | 20,159.6  | 27,768.6 | 36,408.4 | 335,950.7 |
| MARYLAND   | 24017 | CHARLES         | 142,371.9  | 191,530.2 | 245,468.9 | 53,002.7      | 70,193.6  | 89,006.8  | 13,929.1  | 18,545.9 | 23,834.9 | 280,269.1 |
| MARYLAND   | 24019 | DORCHESTER      | 48,583.7   | 66,800.1  | 86,934.9  | 17,252.6      | 23,336.6  | 30,019.9  | 15,463.8  | 20,830.8 | 26,824.7 | 110,967.5 |
| MARYLAND   | 24021 | FREDERICK       | 246,028.4  | 321,407.4 | 405,161.3 | 76,476.5      | 98,336.5  | 122,695.7 | -         | -        | -        | 419,743.8 |
| MARYLAND   | 24023 | GARRETT         | 18,966.4   | 25,059.8  | 31,554.2  | 6,750.3       | 8,786.8   | 10,957.1  | -         | -        | -        | 33,846.6  |
| MARYLAND   | 24025 | HARFORD         | 253,313.4  | 325,041.5 | 400,621.4 | 83,188.4      | 105,441.5 | 128,166.2 | 1,058.5   | 2,180.0  | 3,558.5  | 432,662.9 |
| MARYLAND   | 24027 | HOWARD          | 135,125.9  | 172,533.7 | 211,300.9 | 49,131.8      | 61,666.7  | 74,639.1  | -         | -        | -        | 234,200.4 |
| MARYLAND   | 24029 | KENT            | 28,448.0   | 41,847.9  | 58,590.8  | 8,117.2       | 12,791.4  | 17,724.7  | 7,493.6   | 10,972.2 | 15,229.4 | 65,611.5  |
| MARYLAND   | 24031 | MONTGOMERY      | 136,350.0  | 179,628.1 | 227,297.9 | 50,368.7      | 65,229.0  | 81,671.1  | -         | -        | -        | 244,857.1 |
| MARYLAND   | 24033 | PRINCE GEORGE'S | 42,658.0   | 61,694.5  | 84,980.4  | 15,148.7      | 22,522.2  | 30,754.5  | 1,809.2   | 2,147.6  | 2,529.5  | 86,364.3  |
| MARYLAND   | 24035 | QUEEN ANNE'S    | 80,568.2   | 107,417.9 | 137,036.1 | 26,138.6      | 34,355.5  | 43,399.4  | 43,643.2  | 58,692.1 | 75,369.3 | 200,465.5 |
| MARYLAND   | 24037 | SAINT MARY'S    | 172,276.7  | 227,490.7 | 287,787.0 | 62,185.8      | 81,016.8  | 101,400.7 | 39,791.3  | 52,732.9 | 66,626.2 | 361,270.4 |
| MARYLAND   | 24039 | SOMERSET        | 43,795.5   | 58,675.1  | 75,519.6  | 17,004.3      | 22,424.5  | 28,550.6  | 10,896.1  | 15,489.9 | 20,742.8 | 96,562.5  |
| MARYLAND   | 24041 | TALBOT          | 52,147.4   | 68,074.7  | 85,981.3  | 16,759.8      | 21,479.0  | 26,777.7  | 30,768.9  | 40,301.1 | 50,861.2 | 129,854.8 |
| MARYLAND   | 24043 | WASHINGTON      | 178,204.5  | 239,160.9 | 304,921.0 | 60,294.9      | 79,579.4  | 100,272.2 | -         | -        | -        | 318,740.3 |
| MARYLAND   | 24045 | WICOMICO        | 171,451.1  | 228,317.8 | 291,245.7 | 61,131.9      | 80,237.5  | 101,343.9 | 7,868.1   | 10,752.3 | 14,084.4 | 319,307.7 |
| MARYLAND   | 24047 | WORCESTER       | 29,526.1   | 39,228.2  | 49,901.4  | 12,237.9      | 16,160.5  | 20,483.0  | 378.0     | 458.9    | 535.9    | 55,847.6  |
| MARYLAND   | 24510 | BALTIMORE CITY  | -  | -         | -         | -             | -         | -         | -         | -        | -        | -         |
| NEW YORK   | 36003 | ALLEGANY        | 9,740.8  | 12,965.0  | 16,353.3  | 4,509.9       | 5,909.8   | 7,377.0   | -         | -        | -        | 18,874.8  |
| NEW YORK   | 36007 | BROOME          | 223,509.4  | 299,331.0 | 382,719.9 | 110,488.6     | 145,796.1 | 184,541.6 | -         | -        | -        | 445,127.1 |
| NEW YORK   | 36011 | CAYUGA          | 228.9  | 270.8     | 312.2     | 117.3         | 136.5     | 155.6     | -         | -        | -        | 407.3     |
| NEW YORK   | 36015 | CHEMUNG         | 93,279.1   | 122,520.8 | 153,793.9 | 44,093.2      | 56,817.5  | 70,332.6  | -         | -        | -        | 179,338.3 |
| NEW YORK   | 36017 | CHENANGO        | 156,712.6  | 207,694.1 | 262,081.2 | 73,554.3      | 95,813.0  | 119,435.3 | -         | -        | -        | 303,507.2 |
| NEW YORK   | 36023 | CORTLAND        | 80,288.1   | 105,585.7 | 133,195.8 | 37,826.5      | 48,940.9  | 61,094.5  | -         | -        | -        | 154,526.6 |
| NEW YORK   | 36025 | DELAWARE        | 40,445.2   | 50,795.8  | 61,441.4  | 19,666.9      | 24,271.9  | 28,996.7  | -         | -        | -        | 75,067.7  |
| NEW YORK   | 36043 | HERKIMER        | 20,417.9   | 24,346.9  | 28,425.8  | 8,137.8       | 9,530.4   | 10,990.4  | -         | -        | -        | 33,877.3  |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCR-CHESAPEAKE, Inc.

|              |           |             | b. POUNDS OF NITROGEN LOADED BY RURAL NONFARM POPULATIONS USING SEPTIC TO: |           |           |               |           |           |           |      |     | TOTAL 4b    |
|--------------|-----------|-------------|--|-----------|-----------|---------------|-----------|-----------|-----------|------|-----|-------------|
|              |           |             | GROUND WATER   |           |           | SURFACE WATER |           |           | BAY WATER |      |     |             |
| STATE        | FIPS      | COUNTY      | MIN  | MEAN      | MAX       | MIN           | MEAN      | MAX       | MIN       | MEAN | MAX |             |
| NEW YORK     | 36051     | LIVINGSTON  |  |           |           |               |           |           |           |      |     |             |
| NEW YORK     | 36053     | MADISON     | 1,680.7  | 2,131.2   | 2,534.4   | 800.7         | 998.8     | 1,174.3   |           |      |     | 3,130.0     |
| NEW YORK     | 36065     | ONEIDA EAST | 50,581.1   | 62,007.8  | 75,332.8  | 23,643.0      | 28,758.1  | 34,167.8  |           |      |     | 91,365.9    |
| NEW YORK     | 36067     | ONONDAGA    | 10,881.5   | 13,381.2  | 16,652.1  | 4,584.0       | 5,706.7   | 6,817.1   |           |      |     | 19,487.9    |
| NEW YORK     | 36069     | ONTARIO     | 9,579.1  | 12,663.4  | 16,011.8  | 3,845.9       | 4,957.9   | 6,148.3   |           |      |     | 17,621.3    |
| NEW YORK     | 36077     | OTSEGO      | 552.3  | 690.5     | 814.9     | 241.3         | 296.8     | 346.3     |           |      |     | 987.3       |
| NEW YORK     | 36095     | SCHOHARIE   | 173,476.7  | 224,251.1 | 278,292.2 | 77,549.6      | 98,630.5  | 121,034.8 |           |      |     | 312,881.6   |
| NEW YORK     | 36097     | SCHUYLER    | 4,554.3  | 5,959.3   | 7,272.3   | 2,068.6       | 2,653.5   | 3,154.8   |           |      |     | 8,612.9     |
| NEW YORK     | 36101     | STEUBEN     | 17,949.3   | 23,112.5  | 28,139.1  | 8,394.2       | 10,648.7  | 12,804.4  |           |      |     | 33,791.2    |
| NEW YORK     | 36107     | TIOGA       | 193,818.3  | 258,906.5 | 329,282.1 | 91,300.9      | 119,910.5 | 150,690.0 |           |      |     | 378,817.0   |
| NEW YORK     | 36109     | TOMPKINS    | 145,277.3  | 187,815.9 | 232,641.3 | 68,408.5      | 86,805.5  | 106,050.1 |           |      |     | 214,691.5   |
| NEW YORK     | 36123     | YATES       | 22,838.0   | 29,312.9  | 36,029.1  | 10,983.3      | 13,860.1  | 16,811.1  |           |      |     | 43,193.0    |
| PENNSYLVANIA | 41001     | ADAMS       | 1,056.9  | 1,323.5   | 1,599.1   | 535.4         | 659.1     | 781.1     |           |      |     | 1,983.2     |
| PENNSYLVANIA | 41009     | BEDFORD     | 191,490.6  | 253,461.1 | 321,565.5 | 59,804.0      | 77,817.9  | 97,551.2  |           |      |     | 331,279.0   |
| PENNSYLVANIA | 41011     | BERKS       | 169,380.5  | 217,045.0 | 268,263.7 | 67,658.7      | 85,322.6  | 104,309.9 |           |      |     | 301,367.7   |
| PENNSYLVANIA | 41,013.00 | BLAIR       | 51,482.6   | 64,468.5  | 78,848.2  | 19,365.2      | 23,773.5  | 28,661.9  |           |      |     | 81,242.1    |
| PENNSYLVANIA | 42015     | BRADFORD    | 134,907.2  | 186,591.2 | 245,278.9 | 53,120.2      | 72,360.6  | 94,101.7  |           |      |     | 251,953.8   |
| PENNSYLVANIA | 42021     | CAMBRIA     | 173,347.9  | 218,791.2 | 266,660.6 | 84,728.7      | 104,990.0 | 126,306.6 |           |      |     | 321,787.2   |
| PENNSYLVANIA | 42023     | CAMERON     | 66,925.4   | 89,661.8  | 114,887.0 | 26,585.2      | 34,991.5  | 44,277.5  |           |      |     | 124,657.3   |
| PENNSYLVANIA | 42025     | CARBON      | 11,233.5   | 16,344.2  | 22,333.1  | 3,936.5       | 5,633.3   | 7,608.2   |           |      |     | 21,979.5    |
| PENNSYLVANIA | 42027     | CENTRE      | 5.8  | 1.3       | 8.9       | 2.5           | 3.1       | 3.7       |           |      |     | 10.5        |
| PENNSYLVANIA | 42029     | CHESTER     | 157,631.8  | 212,601.7 | 273,829.4 | 59,528.1      | 78,868.4  | 100,314.8 |           |      |     | 291,477.1   |
| PENNSYLVANIA | 42033     | CLEARFIELD  | 98,353.9   | 122,201.1 | 146,966.5 | 33,511.7      | 40,960.6  | 48,708.2  |           |      |     | 163,163.6   |
| PENNSYLVANIA | 42035     | CLINTON     | 169,170.1  | 225,398.9 | 287,422.9 | 65,151.4      | 85,401.8  | 107,694.3 |           |      |     | 310,800.7   |
| PENNSYLVANIA | 42037     | COLUMBIA    | 52,296.5   | 72,866.6  | 96,318.2  | 21,789.2      | 29,856.0  | 39,002.0  |           |      |     | 102,722.6   |
| PENNSYLVANIA | 42041     | CUMBERLAND  | 162,686.7  | 204,994.8 | 249,028.8 | 66,364.7      | 82,348.4  | 98,983.8  |           |      |     | 287,343.2   |
| PENNSYLVANIA | 42043     | DAUPHIN     | 219,206.0  | 291,325.8 | 372,145.6 | 79,231.0      | 103,688.8 | 131,032.5 |           |      |     | 395,014.6   |
| PENNSYLVANIA | 42047     | ELK         | 201,638.7  | 265,571.4 | 335,841.3 | 71,868.2      | 93,198.9  | 116,591.5 |           |      |     | 358,770.3   |
| PENNSYLVANIA | 42055     | FRANKLIN    | 22,118.2   | 30,965.0  | 41,174.7  | 8,074.6       | 11,102.2  | 14,577.9  |           |      |     | 42,067.2    |
| PENNSYLVANIA | 42057     | FULTON      | 196,986.5  | 272,678.8 | 360,842.6 | 73,876.4      | 100,080.0 | 130,348.0 |           |      |     | 372,588.8   |
| PENNSYLVANIA | 42061     | HUNTINGDON  | 52,172.6   | 64,835.5  | 78,115.9  | 22,031.7      | 26,909.5  | 32,017.2  |           |      |     | 91,745.0    |
| PENNSYLVANIA | 42063     | INDIANA     | 119,362.3  | 152,745.7 | 189,019.0 | 47,208.9      | 59,449.1  | 72,771.0  |           |      |     | 212,194.8   |
| PENNSYLVANIA | 42065     | JEFFERSON   | 13,819.7   | 18,100.9  | 22,693.0  | 5,517.4       | 7,103.9   | 8,801.1   |           |      |     | 25,204.8    |
| PENNSYLVANIA | 42067     | JUNIATA     | 14.9   | 18.5      | 22.5      | 5.3           | 6.5       | 7.7       |           |      |     | 25.0        |
| PENNSYLVANIA | 42069     | LACKAWANNA  | 68,825.7   | 88,540.1  | 109,715.8 | 28,493.0      | 36,079.0  | 44,224.9  |           |      |     | 124,419.7   |
| PENNSYLVANIA | 42071     | LANCASTER   | 96,953.4   | 128,896.4 | 163,888.4 | 33,288.3      | 69,728.8  | 87,673.6  |           |      |     | 198,625.2   |
| PENNSYLVANIA |           |             | 589,971.3  | 775,486.1 | 985,721.4 | 199,863.1     | 258,085.7 | 323,917.1 |           |      |     | 1,033,572.5 |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

|              |       |                | b. POUNDS OF NITROGEN LOADED BY RURAL NONFARM POPULATIONS USING SEPTIC TO: |           |           |               |           |           |           |          |          | TOTAL 4b  |
|--------------|-------|----------------|--|-----------|-----------|---------------|-----------|-----------|-----------|----------|----------|-----------|
|              |       |                | GROUND WATER   |           |           | SURFACE WATER |           |           | BAY WATER |          |          |           |
| STATE        | FIPS  | COUNTY         | MIN  | MEAN      | MAX       | MIN           | MEAN      | MAX       | MIN       | MEAN     | MAX      |           |
| PENNSYLVANIA | 42075 | LEDANON        | 145,399.6  | 193,194.6 | 247,036.9 | 54,135.0      | 71,030.6  | 89,663.9  | -         | -        | -        | 264,225.2 |
| PENNSYLVANIA | 42079 | LUZERNE        | 210,773.0  | 288,085.8 | 375,210.4 | 104,578.3     | 140,399.3 | 180,572.4 | -         | -        | -        | 428,485.1 |
| PENNSYLVANIA | 42081 | LYCOMING       | 213,007.6  | 273,738.5 | 338,159.8 | 88,527.4      | 111,855.2 | 136,551.0 | -         | -        | -        | 385,593.6 |
| PENNSYLVANIA | 42083 | MCKEAN         | 972.1  | 1,243.9   | 1,516.8   | 333.2         | 419.9     | 506.9     | -         | -        | -        | 1,663.7   |
| PENNSYLVANIA | 42087 | MIFFLIN        | 82,662.9   | 116,329.2 | 155,202.0 | 34,731.3      | 47,846.3  | 62,882.0  | -         | -        | -        | 164,175.5 |
| PENNSYLVANIA | 42093 | MONTGOMERY     | 38,573.8   | 49,166.3  | 60,436.7  | 14,184.2      | 18,041.2  | 21,932.4  | -         | -        | -        | 67,207.4  |
| PENNSYLVANIA | 42097 | NORTHUMBERLAND | 129,619.8  | 174,154.9 | 223,426.3 | 51,120.5      | 67,988.8  | 86,609.4  | -         | -        | -        | 242,143.7 |
| PENNSYLVANIA | 42099 | PERRY          | 131,156.9  | 169,114.3 | 209,650.4 | 53,965.8      | 68,479.8  | 83,975.1  | -         | -        | -        | 237,594.0 |
| PENNSYLVANIA | 42105 | POTTER         | 15,275.2   | 19,982.9  | 25,213.0  | 6,330.2       | 8,327.0   | 10,309.0  | -         | -        | -        | 28,309.9  |
| PENNSYLVANIA | 42107 | SCHUYLKILL     | 124,038.9  | 166,683.9 | 213,711.4 | 44,124.9      | 58,606.5  | 74,565.5  | -         | -        | -        | 225,290.4 |
| PENNSYLVANIA | 42109 | SNYDER         | 80,166.5   | 105,789.0 | 134,530.9 | 33,072.0      | 43,226.7  | 54,698.9  | -         | -        | -        | 149,015.7 |
| PENNSYLVANIA | 42111 | SOMERSET       | 11,632.6   | 14,331.9  | 17,112.4  | 4,688.2       | 5,416.0   | 6,394.3   | -         | -        | -        | 19,747.9  |
| PENNSYLVANIA | 42113 | SULLIVAN       | 18,895.3   | 24,569.4  | 30,717.5  | 10,140.0      | 13,095.7  | 16,185.5  | -         | -        | -        | 37,665.1  |
| PENNSYLVANIA | 42115 | SUSQUEHANNA    | 128,449.3  | 163,547.0 | 200,364.4 | 67,301.2      | 84,113.5  | 101,684.3 | -         | -        | -        | 247,660.5 |
| PENNSYLVANIA | 42117 | TIOGA          | 116,933.7  | 146,398.0 | 177,839.0 | 57,184.4      | 70,342.6  | 84,403.9  | -         | -        | -        | 216,740.6 |
| PENNSYLVANIA | 42119 | UNION          | 17,501.3   | 99,942.2  | 124,357.4 | 27,307.9      | 35,013.5  | 43,171.3  | -         | -        | -        | 134,955.7 |
| PENNSYLVANIA | 42127 | WAYNE          | 4,170.8  | 5,338.2   | 6,574.3   | 2,201.9       | 2,772.8   | 3,376.6   | -         | -        | -        | 8,111.0   |
| PENNSYLVANIA | 42131 | WYOMING        | 97,427.0   | 125,631.9 | 155,736.5 | 51,460.4      | 65,174.9  | 79,772.8  | -         | -        | -        | 190,806.1 |
| PENNSYLVANIA | 42133 | YORK           | 514,966.5  | 743,479.4 | 951,428.7 | 192,016.7     | 252,743.5 | 319,449.2 | -         | -        | -        | 996,222.9 |
| VIRGINIA     | 51001 | ACCOMACK       | 17,005.4   | 64,175.4  | 82,704.9  | 20,571.1      | 27,513.2  | 34,951.4  | 8,363.5   | 11,029.4 | 13,980.6 | 102,717.9 |
| VIRGINIA     | 51003 | ALBEMARLE      | 163,799.8  | 215,286.9 | 271,294.7 | 49,186.7      | 63,849.9  | 79,815.2  | -         | -        | -        | 279,136.1 |
| VIRGINIA     | 51005 | ALLEGHANY      | 29,026.2   | 43,542.4  | 61,062.8  | 13,994.1      | 20,438.3  | 28,258.2  | -         | -        | -        | 63,980.7  |
| VIRGINIA     | 51007 | AMELIA         | 35,594.6   | 46,503.7  | 58,529.4  | 10,103.8      | 13,006.8  | 16,202.9  | -         | -        | -        | 59,510.5  |
| VIRGINIA     | 51009 | AMHERST        | 60,925.3   | 84,584.6  | 110,846.4 | 16,658.7      | 22,625.0  | 29,197.7  | -         | -        | -        | 107,209.6 |
| VIRGINIA     | 51011 | APPOMATTOX     | 33,868.5   | 42,639.0  | 51,458.2  | 10,235.2      | 12,734.6  | 15,267.1  | -         | -        | -        | 55,373.6  |
| VIRGINIA     | 51013 | ARLINGTON      | -  | -         | -         | -             | -         | -         | -         | -        | -        | -         |
| VIRGINIA     | 51015 | AUGUSTA        | 150,968.2  | 200,079.3 | 255,402.5 | 61,337.8      | 80,043.0  | 101,137.0 | -         | -        | -        | 280,122.2 |
| VIRGINIA     | 51017 | BATH           | 8,716.5  | 14,572.3  | 21,668.3  | 4,171.7       | 6,871.9   | 10,111.5  | -         | -        | -        | 21,444.2  |
| VIRGINIA     | 51019 | BEDFORD        | 18,838.6   | 27,043.4  | 36,343.6  | 5,311.4       | 7,560.9   | 10,052.6  | -         | -        | -        | 34,604.3  |
| VIRGINIA     | 51023 | BOTETOURT      | 4,003.2  | 59,761.7  | 77,338.6  | 18,155.7      | 24,357.9  | 31,240.8  | -         | -        | -        | 84,119.6  |
| VIRGINIA     | 51029 | BUCKINGHAM     | 46,899.7   | 63,938.3  | 82,078.8  | 13,997.8      | 18,735.3  | 23,749.7  | -         | -        | -        | 82,673.6  |
| VIRGINIA     | 51031 | CAMPBELL       | 32,258.6   | 42,033.6  | 52,969.7  | 9,577.6       | 12,272.3  | 15,286.1  | -         | -        | -        | 54,305.9  |
| VIRGINIA     | 51033 | CAROLINE       | 72,611.2   | 100,363.6 | 130,826.3 | 23,006.0      | 31,167.9  | 40,066.7  | 1,301.1   | 1,656.4  | 2,017.2  | 133,187.8 |
| VIRGINIA     | 51036 | CHARLES CITY   | 24,044.1   | 32,400.7  | 40,924.4  | 9,603.3       | 12,746.9  | 15,935.7  | 2,303.0   | 3,130.5  | 3,989.8  | 48,278.1  |
| VIRGINIA     | 51037 | CHARLOTTE      | 5.0  | 7.0       | 9.3       | 1.4           | 1.9       | 2.5       | -         | -        | -        | 8.9       |
| VIRGINIA     | 51041 | CHESTERFIELD   | 124,312.1  | 171,724.6 | 226,203.9 | 37,257.5      | 50,836.0  | 66,415.6  | 2,592.5   | 3,789.0  | 5,274.9  | 226,349.6 |

Table 12

**NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES**

| CHESAPIAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                | b. POUNDS OF NITROGEN LOADED BY RURAL NONFARM POPULATIONS USING SEPTIC TO: |           |           |               |          |          |           |          |          | TOTAL 4b  |
|--|-------|----------------|--|-----------|-----------|---------------|----------|----------|-----------|----------|----------|-----------|
| STATE  | FIPS  | COUNTY         | ROUND WATER  |           |           | SURFACE WATER |          |          | BAY WATER |          |          |           |
|  |       |                | MIN  | MEAN      | MAX       | MIN           | MEAN     | MAX      | MIN       | MEAN     | MAX      |           |
| VIRGINIA   | 51013 | CLARKE         | 33,880.6   | 44,467.5  | 56,324.6  | 14,031.6      | 17,997.4 | 22,464.5 | -         | -        | -        | 62,464.9  |
| VIRGINIA   | 51045 | CRAIG          | 11,882.7   | 15,977.7  | 20,491.4  | 5,548.9       | 7,339.6  | 9,305.4  | -         | -        | -        | 23,317.3  |
| VIRGINIA   | 51047 | CULPEPER       | 77,195.0   | 101,331.3 | 128,511.2 | 26,349.5      | 34,050.8 | 42,700.1 | -         | -        | -        | 135,382.2 |
| VIRGINIA   | 51049 | CUMBERLAND     | 30,942.9   | 40,776.0  | 51,378.1  | 8,343.1       | 10,776.3 | 13,392.0 | -         | -        | -        | 51,523.3  |
| VIRGINIA   | 51053 | DINWIDDIE      | 16,398.4   | 21,694.3  | 27,573.7  | 3,427.5       | 4,456.6  | 5,598.9  | -         | -        | -        | 26,150.9  |
| VIRGINIA   | 51057 | ESSEX          | 27,776.9   | 37,833.4  | 48,851.0  | 10,169.0      | 13,741.6 | 17,667.1 | 2,006.9   | 3,304.6  | 4,761.6  | 54,879.7  |
| VIRGINIA   | 51059 | FAIRFAX        | 67,757.2   | 95,783.0  | 129,245.7 | 23,096.3      | 32,130.7 | 42,864.5 | 3,442.7   | 4,607.0  | 5,880.2  | 132,520.7 |
| VIRGINIA   | 51061 | FAUQUIER       | 166,248.9  | 213,102.7 | 263,502.0 | 55,840.2      | 70,875.9 | 87,071.1 | -         | -        | -        | 283,978.6 |
| VIRGINIA   | 51065 | FLUVANNA       | 46,109.2   | 61,455.5  | 77,353.1  | 11,386.7      | 14,941.6 | 18,748.7 | -         | -        | -        | 76,397.1  |
| VIRGINIA   | 51069 | FREDERICK      | 113,163.3  | 160,772.9 | 214,476.7 | 41,595.4      | 58,172.7 | 76,735.1 | -         | -        | -        | 218,945.7 |
| VIRGINIA   | 51091 | GILES          | 1,241.5  | 1,504.3   | 1,805.7   | 562.4         | 670.3    | 795.1    | -         | -        | -        | 2,174.6   |
| VIRGINIA   | 51093 | GLOUCESTER     | 77,219.6   | 101,469.5 | 127,544.3 | 29,776.7      | 38,586.1 | 48,061.2 | 16,053.8  | 21,190.9 | 26,975.2 | 161,246.5 |
| VIRGINIA   | 51095 | GOOCHLAND      | 57,642.6   | 75,628.2  | 94,969.4  | 16,662.9      | 21,592.1 | 26,876.9 | -         | -        | -        | 97,220.3  |
| VIRGINIA   | 51099 | GREENE         | 40,291.9   | 53,382.8  | 67,439.5  | 14,379.5      | 18,810.4 | 23,564.4 | -         | -        | -        | 72,193.2  |
| VIRGINIA   | 51015 | HANOVER        | 135,694.8  | 176,807.6 | 221,529.8 | 44,322.8      | 56,945.3 | 70,692.2 | -         | -        | -        | 233,522.9 |
| VIRGINIA   | 51087 | HENRICO        | 69,594.5   | 95,087.8  | 122,691.6 | 22,991.9      | 30,923.4 | 39,475.5 | 2,187.7   | 2,889.9  | 3,643.0  | 128,901.1 |
| VIRGINIA   | 51091 | HIGHLAND       | 6,930.1  | 9,488.2   | 12,770.1  | 3,335.2       | 4,485.6  | 5,964.4  | -         | -        | -        | 13,973.8  |
| VIRGINIA   | 51093 | ISLE OF WIGHT  | 48,637.2   | 62,650.6  | 77,261.7  | 19,404.8      | 24,592.4 | 29,984.0 | 7,138.2   | 9,266.8  | 11,557.7 | 96,509.7  |
| VIRGINIA   | 51095 | JAMES CITY     | 39,004.2   | 56,484.5  | 76,329.8  | 14,552.8      | 20,888.5 | 28,095.9 | 2,468.0   | 3,558.3  | 4,844.8  | 80,931.3  |
| VIRGINIA   | 51097 | KING AND QUEEN | 27,411.2   | 34,431.0  | 41,738.7  | 9,768.6       | 12,069.4 | 14,462.2 | 1,711.7   | 2,115.0  | 2,534.4  | 48,619.5  |
| VIRGINIA   | 51099 | KING GEORGE    | 41,611.6   | 56,170.5  | 72,065.7  | 14,565.1      | 19,406.1 | 24,681.2 | 4,092.8   | 5,643.5  | 7,400.4  | 81,220.0  |
| VIRGINIA   | 51101 | KING WILLIAM   | 33,978.2   | 44,221.5  | 55,229.9  | 12,022.3      | 15,412.7 | 19,063.7 | 1,853.8   | 2,457.8  | 3,125.4  | 62,087.0  |
| VIRGINIA   | 51103 | LANCASTER      | 27,549.8   | 38,670.9  | 50,935.7  | 10,937.5      | 15,064.0 | 19,580.1 | 18,638.3  | 25,284.6 | 32,489.0 | 79,019.6  |
| VIRGINIA   | 51107 | LOUDOUN        | 92,583.9   | 123,219.2 | 158,120.4 | 27,248.4      | 35,734.0 | 45,281.2 | -         | -        | -        | 158,953.3 |
| VIRGINIA   | 51109 | LOUISA         | 88,164.3   | 116,768.1 | 147,505.8 | 20,681.8      | 26,933.5 | 33,636.1 | -         | -        | -        | 143,701.6 |
| VIRGINIA   | 51111 | LUNENBERG      | 11.6   | 15.1      | 18.6      | 3.3           | 4.3      | 5.2      | -         | -        | -        | 19.3      |
| VIRGINIA   | 51113 | MADISON        | 48,788.0   | 62,410.9  | 76,985.3  | 16,691.1      | 20,958.5 | 25,519.0 | -         | -        | -        | 83,169.3  |
| VIRGINIA   | 51115 | MATHEWS        | 23,550.2   | 30,585.8  | 37,995.8  | 12,247.1      | 15,658.8 | 19,248.1 | 15,997.8  | 20,654.6 | 25,667.0 | 66,899.2  |
| VIRGINIA   | 51119 | MIDDLESEX      | 26,007.9   | 34,145.6  | 42,934.0  | 9,730.0       | 12,582.5 | 15,667.9 | 12,518.9  | 17,301.1 | 22,710.9 | 64,031.2  |
| VIRGINIA   | 51121 | MONTGOMERY     | 2,029.4  | 2,601.5   | 3,244.3   | 976.8         | 1,231.8  | 1,518.1  | -         | -        | -        | 3,833.2   |
| VIRGINIA   | 51125 | NELSON         | 45,376.0   | 62,825.0  | 82,245.4  | 13,361.2      | 18,348.8 | 23,892.0 | -         | -        | -        | 81,739.9  |
| VIRGINIA   | 51127 | NEW KENT       | 45,544.3   | 57,596.6  | 69,720.4  | 18,044.6      | 22,472.9 | 26,922.1 | 4,106.0   | 5,241.1  | 6,355.9  | 85,314.5  |
| VIRGINIA   | 51131 | NORTHAMPTON    | 22,266.9   | 30,318.5  | 38,981.1  | 7,982.0       | 10,682.2 | 13,567.4 | 5,132.8   | 7,031.2  | 9,219.1  | 48,035.8  |
| VIRGINIA   | 51133 | NORTHUMBERLAND | 29,226.9   | 38,999.4  | 49,355.2  | 11,096.5      | 14,565.8 | 18,236.5 | 19,049.1  | 25,565.4 | 32,714.5 | 79,134.6  |
| VIRGINIA   | 51135 | NOTTOWAY       | 18,301.5   | 26,278.9  | 35,788.2  | 4,731.0       | 6,547.6  | 8,685.9  | -         | -        | -        | 32,826.5  |
| VIRGINIA   | 51137 | ORANGE         | 62,656.2   | 82,849.6  | 104,963.0 | 18,592.1      | 24,256.2 | 30,462.1 | -         | -        | -        | 107,805.8 |

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                    | b. POUNDS OF NITROGEN LOADED BY RURAL NONFARM POPULATIONS USING SEPTIC TO: |           |           |               |          |           |           |          |          | TOTAL 4b  |
|--|-------|--------------------|--|-----------|-----------|---------------|----------|-----------|-----------|----------|----------|-----------|
| STATE  | FIPS  | COUNTY             | GROUND WATER   |           |           | SURFACE WATER |          |           | BAY WATER |          |          |           |
|  |       |                    | MIN  | MEAN      | MAX       | MIN           | MEAN     | MAX       | MIN       | MEAN     | MAX      |           |
| VIRGINIA   | 51139 | PAOE               | 51,850.5   | 71,246.6  | 92,408.8  | 23,694.5      | 31,931.0 | 40,823.9  | -         | -        | -        | 103,177.6 |
| VIRGINIA   | 51145 | POWHATAN           | 65,312.9   | 83,673.8  | 102,355.8 | 20,192.0      | 25,502.6 | 30,893.2  | -         | -        | -        | 109,176.4 |
| VIRGINIA   | 51147 | PRINCE EDWARD      | 43,328.5   | 57,453.8  | 72,849.7  | 15,262.7      | 20,069.7 | 25,354.3  | -         | -        | -        | 77,523.5  |
| VIRGINIA   | 51149 | PRINCE GEORGE      | 17,731.3   | 24,469.3  | 31,919.4  | 7,461.4       | 10,113.9 | 13,021.6  | 889.3     | 1,202.7  | 1,537.9  | 35,785.8  |
| VIRGINIA   | 51153 | PRINCE WILLIAM     | 158,756.3  | 210,928.0 | 267,209.8 | 51,433.2      | 67,124.7 | 83,993.1  | 122.3     | 474.7    | 927.1    | 278,527.4 |
| VIRGINIA   | 51157 | RAPPAHANNOCK       | 27,245.9   | 35,946.4  | 45,326.7  | 7,769.4       | 10,211.5 | 12,848.7  | -         | -        | -        | 46,151.9  |
| VIRGINIA   | 51159 | RICHMOND           | 23,422.7   | 31,171.1  | 39,619.5  | 8,671.6       | 11,377.3 | 14,328.1  | 2,240.5   | 2,961.3  | 3,785.8  | 45,509.6  |
| VIRGINIA   | 51161 | ROANOKE            | 4,872.3  | 5,924.0   | 6,966.0   | 2,006.5       | 2,399.8  | 2,790.1   | -         | -        | -        | 8,323.8   |
| VIRGINIA   | 51163 | ROCKBRIDGE         | 60,920.4   | 82,931.4  | 106,895.7 | 24,157.0      | 32,349.7 | 41,214.2  | -         | -        | -        | 115,281.1 |
| VIRGINIA   | 51165 | ROCKINGHAM         | 169,538.3  | 225,019.3 | 288,164.3 | 69,376.7      | 90,368.3 | 114,204.5 | -         | -        | -        | 315,381.6 |
| VIRGINIA   | 51171 | SHENANDOAH         | 70,330.0   | 99,290.4  | 133,840.9 | 27,130.7      | 37,729.4 | 50,342.1  | -         | -        | -        | 137,019.8 |
| VIRGINIA   | 51177 | SPOTSYLVANIA       | 114,925.7  | 155,381.4 | 199,453.3 | 30,446.3      | 40,919.6 | 52,358.1  | 1,054.5   | 1,531.1  | 2,137.4  | 197,832.1 |
| VIRGINIA   | 51179 | STAFFORD           | 106,306.2  | 149,023.2 | 197,604.3 | 33,192.1      | 46,173.2 | 60,968.5  | 4,177.9   | 6,188.5  | 8,505.8  | 201,384.9 |
| VIRGINIA   | 51181 | SURRY              | 10,196.0   | 13,422.4  | 17,166.1  | 3,928.4       | 5,087.5  | 6,433.5   | 1,095.4   | 1,417.4  | 1,786.9  | 19,921.3  |
| VIRGINIA   | 51187 | WARREN             | 60,319.4   | 79,923.7  | 101,359.4 | 26,419.4      | 34,564.4 | 43,492.0  | -         | -        | -        | 114,481.1 |
| VIRGINIA   | 51193 | WESTMORELAND       | 43,420.2   | 58,465.6  | 74,448.5  | 17,721.9      | 23,544.4 | 29,730.9  | 8,515.8   | 11,542.8 | 14,953.3 | 93,551.8  |
| VIRGINIA   | 51199 | YORK               | 22,892.5   | 33,396.3  | 45,331.2  | 10,959.9      | 15,854.9 | 21,381.1  | 14,624.5  | 18,621.9 | 22,966.5 | 67,873.1  |
| VIRGINIA   | 51510 | ALEXANDRIA         | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51530 | BUENA VISTA        | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51540 | CHARLOTTESVILLE    | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51550 | CHESAPEAKE CITY    | 176.2  | 424.2     | 673.1     | 98.4          | 226.8    | 354.5     | -         | -        | -        | 651.0     |
| VIRGINIA   | 51560 | CLIFTON FORGE      | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51570 | COLONIAL HEIGHTS   | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51580 | COVINGTON          | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51600 | FAIRFAX            | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51610 | FALLS CHURCH       | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51630 | FREDERICKSBURG     | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51650 | HAMPTON CITY       | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51660 | HARRISONBURG       | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51670 | HOPEWELL           | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51678 | LEXINGTON          | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51680 | LYNCHBURG          | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51683 | MANASSES CITY      | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51685 | MANASSES PARK CITY | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51700 | NEWPORT NEWS CITY  | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |
| VIRGINIA   | 51710 | NORFOLK CITY       | -  | -         | -         | -             | -        | -         | -         | -        | -        | -         |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                     |              |              |              |               |             |             |           |           |           |                     |
|--|-------|---------------------|--------------|--------------|--------------|---------------|-------------|-------------|-----------|-----------|-----------|---------------------|
| b. POUNDS OF NITROGEN LOADED BY RURAL NONFARM POPULATIONS USING SEPTIC TO:         |       |                     |              |              |              |               |             |             |           |           |           |                     |
| STATE  | FIS   | COUNTY              | GROUND WATER |              |              | SURFACE WATER |             |             | BAY WATER |           |           | TOTAL <sup>4b</sup> |
|  |       |                     | MIN          | MEAN         | MAX          | MIN           | MEAN        | MAX         | MIN       | MEAN      | MAX       |                     |
| VIRGINIA   | 51130 | PETERSBURG          | -            | -            | -            | -             | -           | -           | -         | -         | -         | -                   |
| VIRGINIA   | 51135 | POQUOSON            | -            | -            | -            | -             | -           | -           | -         | -         | -         | -                   |
| VIRGINIA   | 51140 | PORTSMOUTH CITY     | -            | -            | -            | -             | -           | -           | -         | -         | -         | -                   |
| VIRGINIA   | 51160 | RICHMOND CITY       | -            | -            | -            | -             | -           | -           | -         | -         | -         | -                   |
| VIRGINIA   | 51190 | STAUNTON            | -            | 261.5        | 780.5        | -             | 101.8       | 294.7       | -         | -         | -         | -                   |
| VIRGINIA   | 51100 | SUFFOLK CITY        | 16,844.2     | 23,236.7     | 30,665.6     | 7,271.2       | 9,903.6     | 12,949.6    | 316.5     | 662.3     | 1,067.2   | 369.3               |
| VIRGINIA   | 51110 | VIRGINIA BEACH CITY | -            | -            | -            | -             | -           | -           | -         | -         | -         | -                   |
| VIRGINIA   | 51120 | WAYNESBORO          | -            | -            | -            | -             | -           | -           | -         | -         | -         | -                   |
| VIRGINIA   | 51130 | WILLIAMSBURG        | -            | -            | -            | -             | -           | -           | -         | -         | -         | -                   |
| VIRGINIA   | 51140 | WINCHESTER          | -            | -            | -            | -             | -           | -           | -         | -         | -         | -                   |
| WEST VIRGINIA  | 54003 | BERKELEY            | 145,888.6    | 204,095.8    | 269,268.0    | 48,401.0      | 66,485.4    | 86,578.5    | -         | -         | -         | 270,581.2           |
| WEST VIRGINIA  | 54023 | GRANT               | 28,287.8     | 38,480.2     | 50,019.4     | 12,872.5      | 17,171.2    | 22,006.7    | -         | -         | -         | 55,551.4            |
| WEST VIRGINIA  | 54025 | GREENBRIAR          | 5.9          | 8.9          | 13.2         | 3.1           | 4.5         | 6.7         | -         | -         | -         | 13.4                |
| WEST VIRGINIA  | 54027 | HAMPSHIRE           | 51,497.6     | 69,506.8     | 89,512.5     | 24,689.8      | 32,821.2    | 41,821.2    | -         | -         | -         | 102,328.0           |
| WEST VIRGINIA  | 54031 | HARDY               | 26,901.4     | 37,684.0     | 50,289.6     | 12,964.3      | 17,867.1    | 23,574.5    | -         | -         | -         | 55,551.1            |
| WEST VIRGINIA  | 54037 | JEFFERSON           | 98,039.0     | 131,866.2    | 168,925.4    | 34,452.6      | 45,611.4    | 57,844.1    | -         | -         | -         | 177,177.6           |
| WEST VIRGINIA  | 54057 | MINERAL             | 47,098.9     | 66,990.3     | 89,759.0     | 20,874.7      | 29,799.1    | 40,144.1    | -         | -         | -         | 96,189.4            |
| WEST VIRGINIA  | 54063 | MONROE              | 2,649.6      | 3,553.5      | 4,580.6      | 1,210.7       | 1,596.7     | 2,034.1     | -         | -         | -         | 5,150.2             |
| WEST VIRGINIA  | 54065 | MORGAN              | 38,759.0     | 53,380.7     | 69,645.0     | 17,217.3      | 23,262.2    | 29,933.2    | -         | -         | -         | 76,542.9            |
| WEST VIRGINIA  | 54071 | PENDLETON           | 21,759.4     | 29,467.2     | 38,496.9     | 10,002.9      | 13,343.8    | 17,248.7    | -         | -         | -         | 42,111.0            |
| WEST VIRGINIA  | 54075 | POCAHONTAS          | 7.3          | 10.4         | 14.1         | 4.0           | 5.6         | 7.5         | -         | -         | -         | 16.1                |
| WEST VIRGINIA  | 54077 | PRESTON             | 226.0        | 285.6        | 346.6        | 78.2          | 97.2        | 116.7       | -         | -         | -         | 182.8               |
| WEST VIRGINIA  | 54083 | RANDOLPH            | 6.8          | 8.7          | 10.8         | 3.4           | 4.3         | 5.1         | -         | -         | -         | 13.0                |
| WEST VIRGINIA  | 54093 | TUCKER              | 8.4          | 33.8         | 68.9         | 3.5           | 12.6        | 25.1        | -         | -         | -         | 46.4                |
| Grand Total  |       |                     | 13,838,264.5 | 18,333,871.8 | 23,273,869.7 | 5,122,406.8   | 6,805,495.8 | 8,540,288.1 | 431,177.3 | 578,768.5 | 742,823.7 | 25,718,137.0        |

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

|                      |       |                 | POUNDS OF NITROGEN LOADED BY FARM POPULATIONS USING SEPTIC TO: |          |          |               |         |          |          |         |         | TOTAL 4c |
|----------------------|-------|-----------------|--|----------|----------|---------------|---------|----------|----------|---------|---------|----------|
|                      |       |                 | GROUND WATER   |          |          | SURFACE WATER |         |          | BAYWATER |         |         |          |
| STATE                | FIPS  | COUNTY          | MIN  | MEAN     | MAX      | MIN           | MEAN    | MAX      | MIN      | MEAN    | MAX     |          |
| DELAWARE             | 10001 | KENT            | 1,004.9  | 5,755.6  | 12,004.7 | 365.0         | 2,033.8 | 4,178.2  | -        | -       | -       | 7,789.4  |
| DELAWARE             | 10003 | NEW CASTLE      | 155.4  | 1,001.3  | 2,132.0  | 46.5          | 307.2   | 653.8    | 5.5      | 23.1    | 43.8    | 1,331.7  |
| DELAWARE             | 10005 | SUSSEX          | 1,398.4  | 10,477.8 | 22,962.9 | 456.1         | 3,277.0 | 10,756.6 | 2.8      | 292.3   | 695.4   | 14,047.1 |
| DISTRICT OF COLUMBIA | 11001 | WASHINGTON      | -  | -        | -        | -             | -       | -        | -        | -       | -       | -        |
| MARYLAND             | 24001 | ALLEGANY        | -  | 1,370.3  | 3,805.5  | -             | 634.4   | 1,729.8  | -        | -       | -       | 2,004.7  |
| MARYLAND             | 24003 | ANNE ARUNDEL    | 1,010.1  | 7,908.1  | 16,913.0 | 377.9         | 2,667.5 | 5,588.2  | -        | 358.4   | 916.9   | 10,934.0 |
| MARYLAND             | 24005 | BALTIMORE       | 1,166.2  | 11,249.7 | 26,403.3 | 427.8         | 3,944.5 | 5,129.6  | -        | 29.1    | 99.2    | 15,223.3 |
| MARYLAND             | 24009 | CALVERT         | 26.8   | 5,599.0  | 15,312.0 | 9.8           | 2,021.0 | 5,475.2  | 4.5      | 829.8   | 2,247.3 | 8,449.8  |
| MARYLAND             | 24011 | CAROLINE        | 3,237.3  | 12,585.2 | 24,347.5 | 1,036.4       | 3,985.2 | 7,630.0  | 123.9    | 645.3   | 1,271.6 | 17,215.7 |
| MARYLAND             | 24013 | CARROLL         | 2,448.0  | 18,958.7 | 42,993.0 | 909.9         | 6,922.3 | 15,560.4 | -        | -       | -       | 25,881.0 |
| MARYLAND             | 24015 | CECIL           | 78.6   | 9,121.9  | 23,069.9 | 25.4          | 2,928.6 | 1,327.9  | -        | 534.9   | 1,439.9 | 12,585.5 |
| MARYLAND             | 24017 | CHARLES         | 971.8  | 7,438.9  | 17,462.4 | 37.2          | 2,722.5 | 4,297.6  | 10.0     | 754.0   | 1,808.1 | 10,215.5 |
| MARYLAND             | 24019 | DORCHESTER      | 142.0  | 4,379.5  | 11,020.0 | 45.1          | 1,445.9 | 3,626.8  | 24.1     | 721.8   | 1,946.2 | 6,547.2  |
| MARYLAND             | 24021 | FREDERICK       | 2,371.9  | 19,797.6 | 43,694.0 | 781.5         | 6,081.4 | 13,085.8 | -        | -       | -       | 25,879.0 |
| MARYLAND             | 24023 | GARRETT         | 168.7  | 1,815.4  | 4,297.1  | 61.7          | 649.1   | 1,509.4  | -        | -       | -       | 2,464.6  |
| MARYLAND             | 24025 | HARFORD         | 384.8  | 7,294.4  | 19,129.8 | 137.1         | 2,448.2 | 4,278.0  | -        | -       | -       | 9,742.6  |
| MARYLAND             | 24027 | HOWARD          | 639.5  | 5,659.8  | 13,288.2 | 234.7         | 2,014.5 | 4,663.3  | -        | -       | -       | 7,674.3  |
| MARYLAND             | 24029 | KENT            | 1,366.4  | 6,482.5  | 12,589.6 | 401.2         | 1,933.8 | 3,733.7  | 139.9    | 1,017.1 | 2,176.5 | 9,433.4  |
| MARYLAND             | 24031 | MONTGOMERY      | 637.5  | 7,031.3  | 15,554.5 | 221.6         | 2,462.4 | 5,405.1  | -        | -       | -       | 9,493.7  |
| MARYLAND             | 24033 | PRINCE GEORGE'S | 558.7  | 3,698.6  | 7,537.0  | 205.5         | 1,344.5 | 2,712.9  | 62.2     | 297.4   | 550.4   | 5,340.4  |
| MARYLAND             | 24035 | QUEEN ANNE'S    | 1,079.4  | 6,763.4  | 14,835.1 | 324.3         | 2,040.4 | 4,457.3  | 23.1     | 981.1   | 2,809.1 | 9,785.0  |
| MARYLAND             | 24037 | SAINT MARY'S    | 1,354.6  | 10,919.0 | 24,645.8 | 499.8         | 3,929.1 | 7,737.4  | 69.6     | 1,597.5 | 4,230.4 | 16,445.6 |
| MARYLAND             | 24039 | SOMERSET        | 618.4  | 4,653.3  | 9,955.0  | 239.7         | 1,745.5 | 3,682.6  | 54.6     | 617.6   | 1,458.8 | 7,016.4  |
| MARYLAND             | 24041 | TALBOT          | 966.2  | 5,686.7  | 11,766.6 | 312.9         | 1,806.4 | 3,691.2  | 364.3    | 2,674.9 | 5,861.0 | 10,168.0 |
| MARYLAND             | 24043 | WASHINGTON      | 634.6  | 9,443.3  | 23,603.8 | 202.2         | 3,090.7 | 7,687.7  | -        | -       | -       | 12,533.9 |
| MARYLAND             | 24045 | WICOMICO        | 1,409.3  | 10,838.1 | 23,462.0 | 468.8         | 3,725.2 | 1,006.0  | -        | 278.4   | 786.9   | 14,841.7 |
| MARYLAND             | 24047 | WORCESTER       | 542.1  | 3,333.7  | 7,063.9  | 191.4         | 1,313.7 | 2,820.0  | -        | 29.8    | 74.0    | 4,677.2  |
| MARYLAND             | 24510 | BALTIMORE CITY  | -  | -        | -        | -             | -       | -        | -        | -       | -       | -        |
| NEW YORK             | 36003 | ALLEGANY        | 53.5   | 504.6    | 1,119.5  | 25.1          | 239.6   | 520.6    | -        | -       | -       | 744.2    |
| NEW YORK             | 36007 | BROOME          | 417.5  | 4,299.8  | 11,179.2 | 199.3         | 2,049.7 | 5,269.9  | -        | -       | -       | 6,349.5  |
| NEW YORK             | 36011 | CAYUGA          | -  | 22.1     | 48.5     | -             | 11.1    | 24.2     | -        | -       | -       | 33.2     |
| NEW YORK             | 36015 | CHEMUNG         | -  | 2,108.4  | 6,273.4  | -             | 990.4   | 2,922.4  | -        | -       | -       | 3,098.9  |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCR/CHESAPEAKE, Inc.

| STATE        | FIPS      | COUNTY      | c. POUNDS OF NITROGEN LOADED BY FARM POPULATIONS USING SEPTIC TO: |          |          |               |         |          |           |      |     | TOTAL <sup>4c</sup> |
|--------------|-----------|-------------|---|----------|----------|---------------|---------|----------|-----------|------|-----|---------------------|
|              |           |             | GROUND WATER  |          |          | SURFACE WATER |         |          | BAY WATER |      |     |                     |
|              |           |             | MIN   | MEAN     | MAX      | MIN           | MEAN    | MAX      | MIN       | MEAN | MAX |                     |
| NEW YORK     | 36017     | CHENANGO    | 511.2   | 16,450.1 | 26,122.7 | 234.0         | 4,861.1 | 12,033.4 | -         | -    | -   | 15,111.2            |
| NEW YORK     | 36023     | CORTLAND    | 286.0   | 6,379.8  | 15,099.9 | 143.7         | 3,011.4 | 7,005.2  | -         | -    | -   | 9,191.2             |
| NEW YORK     | 36025     | DELAWARE    | 373.3   | 1,285.1  | 7,304.7  | 172.0         | 1,578.7 | 3,487.0  | -         | -    | -   | 4,163.8             |
| NEW YORK     | 36043     | HERKIMER    | 82.7  | 1,083.7  | 4,361.7  | 35.1          | 835.4   | 1,724.2  | -         | -    | -   | 2,919.2             |
| NEW YORK     | 36051     | LIVINGSTON  | -   | 47.4     | 181.6    | -             | 22.2    | 84.1     | -         | -    | -   | 69.6                |
| NEW YORK     | 36053     | MADISON     | 470.7   | 5,063.6  | 10,566.3 | 220.1         | 2,321.7 | 4,794.4  | -         | -    | -   | 7,385.3             |
| NEW YORK     | 36065     | ONEIDA EAST | 11.0  | 786.8    | 2,027.1  | 4.3           | 335.8   | 849.3    | -         | -    | -   | 1,122.6             |
| NEW YORK     | 36067     | ONONDAGA    | 19.7  | 804.8    | 1,941.0  | 7.7           | 322.0   | 769.9    | -         | -    | -   | 1,126.8             |
| NEW YORK     | 36069     | ONTARIO     | -   | 18.6     | 61.3     | -             | 8.0     | 26.1     | -         | -    | -   | 26.6                |
| NEW YORK     | 36077     | OTSEGO      | 937.6   | 12,331.7 | 28,841.2 | 398.0         | 5,355.9 | 12,396.5 | -         | -    | -   | 17,687.6            |
| NEW YORK     | 36095     | SCHOHARIE   | -   | 239.9    | 791.2    | -             | 112.1   | 357.4    | -         | -    | -   | 352.0               |
| NEW YORK     | 36097     | SCHUYLER    | -   | 754.8    | 2,367.1  | -             | 345.1   | 1,071.8  | -         | -    | -   | 1,099.9             |
| NEW YORK     | 36101     | STEUEN      | 1,399.9   | 14,267.1 | 34,062.7 | 708.6         | 6,804.1 | 15,951.0 | -         | -    | -   | 21,071.2            |
| NEW YORK     | 36107     | TIOGA       | 574.4   | 7,289.4  | 17,405.7 | 273.1         | 3,414.7 | 8,043.9  | -         | -    | -   | 10,704.0            |
| NEW YORK     | 36109     | TOMPKINS    | 1.1   | 946.2    | 2,482.4  | 0.6           | 442.5   | 1,150.7  | -         | -    | -   | 1,388.7             |
| NEW YORK     | 36123     | YATES       | 11.4  | 111.0    | 245.5    | 5.9           | 55.2    | 120.8    | -         | -    | -   | 156.2               |
| PENNSYLVANIA | 42001     | ADAMS       | 5,998.8   | 18,136.5 | 34,746.2 | 1,874.9       | 5,550.2 | 10,505.7 | -         | -    | -   | 23,616.6            |
| PENNSYLVANIA | 42009     | BEDFORD     | 4,501.8   | 12,510.0 | 22,806.0 | 1,782.6       | 4,893.5 | 8,831.4  | -         | -    | -   | 17,403.6            |
| PENNSYLVANIA | 42011     | BERKS       | 2,047.0   | 5,351.6  | 9,567.8  | 830.8         | 2,129.9 | 3,661.9  | -         | -    | -   | 7,511.5             |
| PENNSYLVANIA | 42,013.00 | BLAIR       | 2,296.2   | 7,184.6  | 15,024.9 | 818.6         | 2,724.9 | 5,582.9  | -         | -    | -   | 10,139.4            |
| PENNSYLVANIA | 42015     | BRADFORD    | 4,256.1   | 14,998.3 | 28,042.0 | 2,144.1       | 7,196.4 | 13,618.0 | -         | -    | -   | 21,794.7            |
| PENNSYLVANIA | 42021     | CAMBRIA     | 599.6   | 2,465.7  | 5,425.1  | 245.5         | 982.5   | 2,126.0  | -         | -    | -   | 3,448.3             |
| PENNSYLVANIA | 42023     | CAMERON     | -   | 32.5     | 144.6    | -             | 11.2    | 49.4     | -         | -    | -   | 43.7                |
| PENNSYLVANIA | 42025     | CARBON      | 0.0   | 0.2      | 0.4      | 0.0           | 0.1     | 0.1      | -         | -    | -   | 0.2                 |
| PENNSYLVANIA | 42027     | CENTRE      | 3,202.6   | 12,452.2 | 25,212.1 | 1,231.8       | 4,492.6 | 9,211.6  | -         | -    | -   | 16,637.9            |
| PENNSYLVANIA | 42029     | CHESTER     | 3,623.7   | 9,172.0  | 15,929.5 | 1,242.2       | 3,095.6 | 5,316.6  | -         | -    | -   | 12,267.6            |
| PENNSYLVANIA | 42033     | CLEARFIELD  | 197.3   | 3,283.4  | 8,252.1  | 78.1          | 1,258.3 | 3,117.8  | -         | -    | -   | 4,541.7             |
| PENNSYLVANIA | 42035     | CLINTON     | 1,194.0   | 3,590.9  | 8,134.8  | 513.1         | 1,665.8 | 3,352.8  | -         | -    | -   | 5,656.7             |
| PENNSYLVANIA | 42037     | COLUMBIA    | 4,512.3   | 11,520.2 | 20,646.5 | 1,662.5       | 4,290.1 | 7,689.8  | -         | -    | -   | 15,810.3            |
| PENNSYLVANIA | 42041     | CUMBERLAND  | 3,889.8   | 16,422.1 | 33,284.7 | 1,379.9       | 5,645.5 | 11,311.1 | -         | -    | -   | 22,067.7            |
| PENNSYLVANIA | 42043     | DAUPHIN     | 2,530.3   | 11,292.4 | 23,902.7 | 800.5         | 3,763.4 | 8,017.8  | -         | -    | -   | 15,051.8            |
| PENNSYLVANIA | 42047     | ELK         | -   | 30.5     | 119.6    | -             | 10.8    | 42.1     | -         | -    | -   | 41.3                |

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
 COUNTY SUMMARIES  
 NCRI-CHESAPEAKE, Inc

|              |       |                | c. POUNDS OF NITROGEN LOADED BY FARM POPULATIONS USING SEPTIC TO: |           |           |               |          |          |           |       |         | TOTAL 4c  |
|--------------|-------|----------------|---|-----------|-----------|---------------|----------|----------|-----------|-------|---------|-----------|
|              |       |                | GROUND WATER  |           |           | SURFACE WATER |          |          | BAY WATER |       |         |           |
| STATE        | FIPS  | COUNTY         | MIN   | MEAN      | MAX       | MIN           | MEAN     | MAX      | MIN       | MEAN  | MAX     |           |
| PENNSYLVANIA | 42015 | FRANKLIN       | 7,093.9   | 26,078.7  | 50,516.3  | 2,702.7       | 9,554.5  | 11,270.7 | -         | -     | -       | 35,633.3  |
| PENNSYLVANIA | 42017 | FULTON         | 1,560.6   | 4,651.1   | 8,415.0   | 679.1         | 1,948.6  | 3,475.3  | -         | -     | -       | 6,600.4   |
| PENNSYLVANIA | 42051 | HUNTINGDON     | 2,106.8   | 7,505.0   | 14,302.2  | 814.6         | 2,949.5  | 5,573.7  | -         | -     | -       | 10,454.4  |
| PENNSYLVANIA | 42053 | INDIANA        | 109.4   | 480.5     | 1,067.2   | 45.3          | 192.8    | 420.7    | -         | -     | -       | 673.2     |
| PENNSYLVANIA | 42055 | JEFFERSON      | 0.9   | 2.1       | 3.6       | 0.3           | 0.7      | 1.2      | -         | -     | -       | 2.9       |
| PENNSYLVANIA | 42057 | JUNIATA        | 2,566.2   | 6,639.9   | 11,973.9  | 1,049.4       | 2,676.6  | 4,778.3  | -         | -     | -       | 9,316.5   |
| PENNSYLVANIA | 42059 | LACKAWANNA     | 157.2   | 2,476.1   | 6,212.0   | 59.4          | 1,400.6  | 3,458.5  | -         | -     | -       | 3,877.5   |
| PENNSYLVANIA | 42011 | LANCASTER      | 37,122.2  | 105,957.7 | 191,032.0 | 12,459.7      | 34,843.5 | 61,075.7 | -         | -     | -       | 140,801.2 |
| PENNSYLVANIA | 42075 | LEBANON        | 1,210.6   | 11,351.0  | 24,979.2  | 439.1         | 4,161.7  | 9,068.8  | -         | -     | -       | 15,512.7  |
| PENNSYLVANIA | 42079 | LUZERNE        | 727.1   | 4,775.4   | 11,737.2  | 319.5         | 2,231.9  | 3,455.0  | -         | -     | -       | 7,007.4   |
| PENNSYLVANIA | 42011 | LYCOMING       | 2,352.2   | 10,382.5  | 21,714.0  | 990.2         | 4,278.6  | 8,863.5  | -         | -     | -       | 14,661.1  |
| PENNSYLVANIA | 42013 | MCKEAN         | -   | 19.3      | 61.6      | -             | 6.5      | 20.5     | -         | -     | -       | 25.9      |
| PENNSYLVANIA | 42017 | MIFFLIN        | 2,045.9   | 8,139.2   | 16,667.5  | 805.1         | 3,154.0  | 6,395.5  | -         | -     | -       | 11,293.2  |
| PENNSYLVANIA | 42093 | MONTOUR        | 1,784.5   | 4,135.9   | 6,950.1   | 667.8         | 1,524.8  | 2,534.9  | -         | -     | -       | 5,660.7   |
| PENNSYLVANIA | 42097 | NORTHUMBERLAND | 3,498.2   | 9,995.9   | 19,574.3  | 1,324.8       | 3,796.5  | 7,421.6  | -         | -     | -       | 13,792.5  |
| PENNSYLVANIA | 42099 | PERRY          | 3,470.0   | 10,213.9  | 19,572.0  | 1,426.1       | 4,113.5  | 7,780.6  | -         | -     | -       | 14,327.4  |
| PENNSYLVANIA | 42145 | POTTER         | 286.2   | 1,552.9   | 3,214.7   | 138.8         | 668.1    | 1,341.1  | -         | -     | -       | 2,221.0   |
| PENNSYLVANIA | 42147 | SCHUYLKILL     | 1,193.9   | 5,342.0   | 11,920.0  | 403.8         | 1,815.0  | 4,061.8  | -         | -     | -       | 7,157.1   |
| PENNSYLVANIA | 42109 | SNYDER         | 4,344.8   | 10,137.3  | 17,212.5  | 1,759.0       | 4,081.5  | 6,884.0  | -         | -     | -       | 14,218.8  |
| PENNSYLVANIA | 42111 | SOMERSET       | 761.6   | 1,772.3   | 3,007.5   | 292.7         | 669.5    | 1,123.2  | -         | -     | -       | 2,441.8   |
| PENNSYLVANIA | 42113 | SULLIVAN       | 93.2  | 901.4     | 2,044.7   | 50.0          | 479.4    | 1,074.8  | -         | -     | -       | 1,381.2   |
| PENNSYLVANIA | 42115 | SUSQUEHANNA    | 1,099.5   | 6,318.2   | 13,769.9  | 586.4         | 3,286.4  | 7,063.5  | -         | -     | -       | 9,604.6   |
| PENNSYLVANIA | 42117 | TIOGA          | 4,287.2   | 12,897.4  | 23,214.3  | 2,116.5       | 6,297.2  | 11,224.5 | -         | -     | -       | 19,194.6  |
| PENNSYLVANIA | 42119 | UNION          | 3,189.7   | 9,161.7   | 17,002.8  | 1,228.9       | 3,256.6  | 5,905.7  | -         | -     | -       | 12,418.3  |
| PENNSYLVANIA | 42117 | WAYNE          | 40.5  | 366.2     | 815.5     | 22.0          | 192.2    | 422.7    | -         | -     | -       | 558.4     |
| PENNSYLVANIA | 42111 | WYOMING        | 806.3   | 4,052.6   | 8,637.2   | 435.4         | 2,140.9  | 4,493.9  | -         | -     | -       | 6,193.5   |
| PENNSYLVANIA | 42113 | YORK           | 3,299.7   | 30,473.7  | 70,875.4  | 1,176.0       | 10,508.1 | 21,342.7 | -         | -     | -       | 41,081.7  |
| VIRGINIA     | 51001 | ACCOMACK       | 42.1  | 2,412.4   | 6,857.6   | 23.4          | 1,080.5  | 2,978.2  | 1.4       | 470.2 | 1,290.2 | 3,963.0   |
| VIRGINIA     | 51003 | ALBEMARLE      | 444.3   | 9,588.9   | 23,111.7  | 120.4         | 2,730.5  | 6,569.7  | -         | -     | -       | 12,317.4  |
| VIRGINIA     | 51005 | ALLEGHANY      | 251.8   | 1,520.8   | 3,378.9   | 117.3         | 700.0    | 1,538.3  | -         | -     | -       | 2,220.8   |
| VIRGINIA     | 51007 | AMELIA         | 641.4   | 4,517.5   | 9,666.1   | 155.5         | 1,222.0  | 2,620.3  | -         | -     | -       | 5,739.6   |
| VIRGINIA     | 51009 | AMHERST        | 37.5  | 2,821.0   | 7,191.1   | 11.9          | 764.6    | 1,890.4  | -         | -     | -       | 3,585.6   |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

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|          |       |                | c. POUNDS OF NITROGEN LOADED BY FARM POPULATIONS USING SEPTIC TO: |          |          |               |         |          |           |       |       | TOTAL <sup>4c</sup> |
|----------|-------|----------------|---|----------|----------|---------------|---------|----------|-----------|-------|-------|---------------------|
|          |       |                | GROUND WATER  |          |          | SURFACE WATER |         |          | BAY WATER |       |       |                     |
| STATE    | FIPS  | COUNTY         | MIN   | MEAN     | MAX      | MIN           | MEAN    | MAX      | MIN       | MEAN  | MAX   |                     |
| VIRGINIA | 51011 | APPOMATTOX     | 14.2  | 2,482.9  | 6,227.5  | 4.2           | 744.8   | 1,852.1  | -         | -     | -     | 3,227.6             |
| VIRGINIA | 51013 | ARLINGTON      | -   | -        | -        | -             | -       | -        | -         | -     | -     | -                   |
| VIRGINIA | 51015 | AUGUSTA        | 3,748.6   | 10,410.7 | 39,815.1 | 1,475.9       | 7,670.1 | 15,614.6 | -         | -     | -     | 27,080.8            |
| VIRGINIA | 51017 | BATH           | 153.5   | 920.3    | 2,172.5  | 72.3          | 427.7   | 1,001.2  | -         | -     | -     | 1,348.0             |
| VIRGINIA | 51019 | BEDFORD        | 0.0   | 718.8    | 1,891.2  | 0.0           | 204.8   | 528.8    | -         | -     | -     | 923.6               |
| VIRGINIA | 51023 | BOTETOURT      | 514.2   | 1,846.0  | 8,642.0  | 200.7         | 1,474.1 | 3,314.8  | -         | -     | -     | 5,320.1             |
| VIRGINIA | 51029 | BUCKINGHAM     | -   | 1,882.7  | 8,053.7  | -             | 859.4   | 2,358.7  | -         | -     | -     | 3,742.1             |
| VIRGINIA | 51031 | CAMPBELL       | -   | 575.2    | 1,395.1  | -             | 170.6   | 406.4    | -         | -     | -     | 745.8               |
| VIRGINIA | 51033 | CAROLINE       | -   | 2,988.1  | 8,476.4  | -             | 933.2   | 2,599.4  | -         | 67.8  | 180.8 | 3,289.0             |
| VIRGINIA | 51036 | CHARLES CITY   | -   | 609.7    | 2,459.8  | -             | 263.9   | 958.8    | -         | 62.6  | 233.5 | 996.2               |
| VIRGINIA | 51037 | CHARLOTTE      | 0.0   | 0.3      | 0.7      | 0.0           | 0.1     | 0.2      | -         | -     | -     | 0.4                 |
| VIRGINIA | 51041 | CHESTERFIELD   | -   | 2,982.1  | 7,769.2  | -             | 958.0   | 2,464.5  | -         | -     | -     | 3,940.1             |
| VIRGINIA | 51043 | CLARKE         | 608.9   | 4,593.5  | 9,290.3  | 212.4         | 1,655.2 | 3,340.6  | -         | -     | -     | 6,148.7             |
| VIRGINIA | 51045 | CRAIG          | 169.2   | 828.5    | 1,801.8  | 77.7          | 375.4   | 809.4    | -         | -     | -     | 1,303.9             |
| VIRGINIA | 51047 | CULPEPER       | 410.7   | 5,665.1  | 12,910.4 | 128.8         | 1,844.9 | 4,181.5  | -         | -     | -     | 7,510.0             |
| VIRGINIA | 51049 | CUMBERLAND     | 128.5   | 3,598.9  | 8,416.0  | 32.7          | 950.8   | 2,188.3  | -         | -     | -     | 4,549.8             |
| VIRGINIA | 51053 | DINWIDDIE      | 111.2   | 1,476.7  | 3,499.3  | 26.8          | 313.8   | 725.5    | -         | -     | -     | 1,790.5             |
| VIRGINIA | 51057 | ESSEX          | 22.1  | 1,794.4  | 4,623.3  | 8.2           | 646.0   | 1,647.2  | 1.9       | 189.1 | 587.1 | 2,629.5             |
| VIRGINIA | 51059 | FAIRFAX        | -   | 1,214.3  | 2,777.9  | -             | 427.5   | 960.5    | -         | 98.4  | 273.1 | 1,740.1             |
| VIRGINIA | 51061 | FAUQUIER       | 2,891.3   | 14,666.5 | 30,215.8 | 860.6         | 4,580.9 | 9,528.3  | -         | -     | -     | 19,347.4            |
| VIRGINIA | 51065 | FLUVANNA       | 11.1  | 2,764.1  | 7,133.8  | 2.5           | 685.5   | 1,751.0  | -         | -     | -     | 3,449.6             |
| VIRGINIA | 51069 | FREDERICK      | 28.5  | 5,834.4  | 16,082.3 | 9.1           | 2,053.1 | 5,646.4  | -         | -     | -     | 7,187.4             |
| VIRGINIA | 51071 | GILES          | 93.1  | 291.1    | 506.6    | 42.2          | 129.7   | 223.2    | -         | -     | -     | 420.8               |
| VIRGINIA | 51073 | GLOUCESTER     | -   | 2,106.3  | 5,602.8  | -             | 768.7   | 2,051.3  | -         | 237.2 | 653.8 | 3,112.2             |
| VIRGINIA | 51075 | GOOCHLAND      | 266.6   | 4,286.0  | 10,151.6 | 65.9          | 1,194.9 | 2,841.3  | -         | -     | -     | 5,480.9             |
| VIRGINIA | 51079 | GREENE         | -   | 2,243.6  | 5,758.3  | -             | 818.8   | 2,080.0  | -         | -     | -     | 3,662.5             |
| VIRGINIA | 51085 | HANOVER        | 150.9   | 7,732.7  | 18,707.9 | 43.4          | 2,402.8 | 5,770.0  | -         | -     | -     | 10,135.5            |
| VIRGINIA | 51087 | HENRICO        | -   | 1,911.4  | 5,843.4  | -             | 629.8   | 1,899.8  | -         | 35.3  | 114.4 | 2,576.5             |
| VIRGINIA | 51091 | HIGHLAND       | 351.7   | 2,138.9  | 4,189.8  | 176.7         | 1,015.9 | 1,963.0  | -         | -     | -     | 3,154.7             |
| VIRGINIA | 51093 | ISLE OF WIGHT  | 26.1  | 2,253.9  | 5,808.8  | 10.4          | 864.8   | 2,209.2  | -         | 133.6 | 378.8 | 3,252.3             |
| VIRGINIA | 51095 | JAMES CITY     | -   | 667.2    | 2,221.5  | -             | 226.6   | 747.7    | -         | 6.4   | 25.8  | 990.2               |
| VIRGINIA | 51097 | KING AND QUEEN | 242.0   | 2,137.1  | 4,668.2  | 83.8          | 743.5   | 1,610.5  | 7.2       | 99.5  | 230.1 | 2,910.1             |

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

|               |       |                     | e. POUNDS OF NITROGEN LOADED BY FARM POPULATIONS USING SEPTIC TO: |         |          |               |         |         |           |      |      | TOTAL 4c |
|---------------|-------|---------------------|---|---------|----------|---------------|---------|---------|-----------|------|------|----------|
|               |       |                     | GROUND WATER  |         |          | SURFACE WATER |         |         | BAY WATER |      |      |          |
| STATE         | FIPS  | COUNTY              | MIN   | MEAN    | MAX      | MIN           | MEAN    | MAX     | MIN       | MEAN | MAX  |          |
| VIRGINIA      | 51199 | YORK                | -   | 144.0   | 695.9    | -             | 65.9    | 324.9   | -         | -    | -    | 209.9    |
| VIRGINIA      | 51510 | ALEXANDRIA          | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51530 | BUENA VISTA         | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51540 | CHARLOTTESVILLE     | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51550 | CHESAPEAKE CITY     | -   | 63.1    | 168.2    | -             | 33.9    | 88.7    | -         | -    | -    | 97.0     |
| VIRGINIA      | 51560 | CLIFTON FORGE       | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51570 | COLONIAL HEIGHTS    | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51580 | COVINGTON           | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51600 | FAIRFAX             | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51610 | FALLS CHURCH        | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51630 | FREDERICKSBURG      | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51650 | HAMPTON CITY        | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51660 | HARRISONBURG        | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51670 | HOPEWELL            | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51678 | LEXINGTON           | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51680 | LYNCHBURG           | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51683 | MANASSES CITY       | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51685 | MANASSES PARK CITY  | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51700 | NEWPORT NEWS CITY   | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51710 | NORFOLK CITY        | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51730 | PETERSBURG          | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51735 | POQUOSON            | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51740 | PORTSMOUTH CITY     | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51760 | RICHMOND CITY       | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51790 | STAUNTON            | -   | 279.2   | 655.1    | -             | 103.5   | 240.2   | -         | -    | -    | 382.8    |
| VIRGINIA      | 51800 | SUFFOLK CITY        | 50.9  | 1,325.3 | 3,022.7  | 22.3          | 562.3   | 1,274.2 | 0.0       | 9.8  | 27.5 | 1,898.4  |
| VIRGINIA      | 51810 | VIRGINIA BEACH CITY | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51820 | WAYNESBORO          | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51830 | WILLIAMSBURG        | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| VIRGINIA      | 51840 | WINCHESTER          | -   | -       | -        | -             | -       | -       | -         | -    | -    | -        |
| WEST VIRGINIA | 54003 | BERKELEY            | 171.9   | 5,279.3 | 14,437.8 | 76.6          | 1,765.8 | 4,721.1 | -         | -    | -    | 7,045.1  |
| WEST VIRGINIA | 54023 | GRANT               | 124.1   | 2,621.5 | 6,183.8  | 57.2          | 1,199.2 | 2,798.4 | -         | -    | -    | 3,822.7  |

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                |              |          |          |               |         |          |           |         |         |          |
|--|-------|----------------|--------------|----------|----------|---------------|---------|----------|-----------|---------|---------|----------|
| POUNDS OF NITROGEN LOADED BY FARM POPULATIONS USING SEPTIC TO:                     |       |                |              |          |          |               |         |          |           |         |         |          |
|  |       |                | GROUND WATER |          |          | SURFACE WATER |         |          | BAY WATER |         |         | TOTAL 4c |
| STATE  | FIPS  | COUNTY         | MIN          | MEAN     | MAX      | MIN           | MEAN    | MAX      | MIN       | MEAN    | MAX     |          |
| VIRGINIA   | 51099 | KING GEORGE    | 150.8        | 2,197.2  | 5,495.8  | 48.1          | 750.4   | 1,869.6  | 34.6      | 411.7   | 950.8   | 3,359.3  |
| VIRGINIA   | 51101 | KING WILLIAM   | 122.3        | 1,710.6  | 3,997.3  | 46.0          | 624.7   | 1,434.2  | 3.3       | 123.4   | 285.2   | 2,458.7  |
| VIRGINIA   | 51101 | LANCASTER      | -            | 866.4    | 2,689.2  | -             | 320.3   | 992.6    | -         | 380.4   | 1,273.2 | 1,567.1  |
| VIRGINIA   | 51107 | LOUDOUN        | 2,845.7      | 14,022.9 | 28,192.2 | 721.9         | 3,754.1 | 7,596.2  | -         | -       | -       | 17,777.1 |
| VIRGINIA   | 51109 | LOUISA         | -            | 6,075.4  | 15,338.7 | -             | 1,382.2 | 3,443.7  | -         | -       | -       | 7,457.6  |
| VIRGINIA   | 51111 | LUNENBERG      | -            | 0.4      | 1.2      | -             | 0.1     | 0.3      | -         | -       | -       | 0.5      |
| VIRGINIA   | 51113 | MADISON        | 1,741.8      | 5,205.2  | 9,707.6  | 586.5         | 1,738.8 | 3,204.0  | -         | -       | -       | 6,944.0  |
| VIRGINIA   | 51115 | MATHEWS        | -            | 422.4    | 1,206.0  | -             | 213.7   | 603.0    | -         | 168.0   | 473.4   | 804.0    |
| VIRGINIA   | 51119 | MIDDLESEX      | -            | 1,525.5  | 3,754.9  | -             | 560.6   | 1,357.0  | -         | 230.9   | 661.4   | 2,317.0  |
| VIRGINIA   | 51121 | MONTGOMERY     | 33.9         | 243.1    | 494.6    | 16.3          | 115.1   | 231.6    | -         | -       | -       | 358.2    |
| VIRGINIA   | 51125 | NELSON         | 152.5        | 3,257.6  | 8,293.4  | 321           | 878.2   | 2,273.4  | -         | -       | -       | 4,135.8  |
| VIRGINIA   | 51127 | NEW KENT       | 219.2        | 1,895.2  | 4,631.9  | 90.0          | 747.3   | 1,806.6  | -         | 94.9    | 343.0   | 2,737.4  |
| VIRGINIA   | 51131 | NORTHAMPTON    | 22.9         | 1,915.2  | 5,024.2  | 82            | 687.9   | 1,734.3  | 6.0       | 500.1   | 1,292.5 | 3,083.2  |
| VIRGINIA   | 51133 | NORTHUMBERLAND | 14.4         | 1,908.2  | 5,046.1  | 62            | 725.4   | 1,881.6  | 11.6      | 1,095.5 | 2,796.9 | 3,729.1  |
| VIRGINIA   | 51135 | NOTTOWAY       | 167.8        | 2,402.5  | 5,332.9  | 40.6          | 642.4   | 1,410.1  | -         | -       | -       | 3,044.9  |
| VIRGINIA   | 51137 | ORANGE         | 286.0        | 4,616.1  | 10,681.6 | 79.8          | 1,363.2 | 3,128.1  | -         | -       | -       | 5,979.3  |
| VIRGINIA   | 51139 | PAGE           | 203.0        | 4,215.2  | 10,823.3 | 86.6          | 1,808.8 | 4,620.6  | -         | -       | -       | 6,024.0  |
| VIRGINIA   | 51145 | POWHATAN       | -            | 2,234.8  | 6,155.8  | -             | 647.2   | 1,790.0  | -         | -       | -       | 2,882.0  |
| VIRGINIA   | 51147 | PRINCE EDWARD  | 49.7         | 3,199.0  | 7,742.6  | 17.4          | 1,095.8 | 2,607.4  | -         | -       | -       | 4,294.9  |
| VIRGINIA   | 51149 | PRINCE GEORGE  | -            | 588.9    | 1,636.4  | -             | 244.3   | 673.3    | -         | 25.5    | 76.0    | 858.7    |
| VIRGINIA   | 51153 | PRINCE WILLIAM | 30.0         | 4,114.9  | 10,993.7 | 9.9           | 1,374.4 | 3,591.1  | -         | -       | -       | 5,489.3  |
| VIRGINIA   | 51157 | RAPPAHANNOCK   | 134.3        | 2,656.3  | 6,322.8  | 45.1          | 763.3   | 1,810.8  | -         | -       | -       | 3,419.6  |
| VIRGINIA   | 51159 | RICHMOND       | -            | 2,236.7  | 5,480.1  | -             | 829.6   | 2,006.0  | -         | 296.7   | 679.3   | 3,363.0  |
| VIRGINIA   | 51161 | ROANOKE        | 49.1         | 350.6    | 737.6    | 20.2          | 141.9   | 293.3    | -         | -       | -       | 492.5    |
| VIRGINIA   | 51161 | ROCKBRIDGE     | 332.3        | 5,329.6  | 13,326.9 | 130.4         | 2,054.1 | 5,102.2  | -         | -       | -       | 7,383.7  |
| VIRGINIA   | 51165 | ROCKINGHAM     | 4,834.8      | 23,583.7 | 47,691.7 | 1,951.2       | 9,393.2 | 18,769.6 | -         | -       | -       | 32,976.9 |
| VIRGINIA   | 51171 | SHENANDOAH     | 493.2        | 7,583.2  | 16,844.7 | 178.0         | 2,905.2 | 6,408.9  | -         | -       | -       | 10,488.4 |
| VIRGINIA   | 51177 | SPOTSYLVANIA   | 421.7        | 5,552.8  | 13,901.7 | 184.0         | 1,507.2 | 3,664.4  | -         | 275.9   | 563.0   | 7,336.0  |
| VIRGINIA   | 51179 | STAFFORD       | -            | 1,651.7  | 5,381.3  | -             | 502.3   | 1,615.9  | -         | 49.4    | 164.5   | 2,203.4  |
| VIRGINIA   | 51181 | SURRY          | 5.3          | 1,216.4  | 2,687.2  | 21            | 462.1   | 1,009.2  | 0.3       | 116.5   | 257.1   | 1,794.9  |
| VIRGINIA   | 51187 | WARREN         | -            | 1,490.5  | 4,028.7  | -             | 567.7   | 1,534.9  | -         | -       | -       | 2,058.2  |
| VIRGINIA   | 51193 | WESTMORELAND   | -            | 2,108.7  | 5,934.9  | -             | 821.0   | 2,285.6  | -         | 475.4   | 1,245.4 | 3,405.1  |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
 THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
 OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
 COUNTY SUMMARIES  
 NCRI-CHESAPEAKE, Inc.

|               |       |            | POUNDS OF NITROGEN LOADED BY FARM POPULATIONS USING SEPTIC TO: |           |             |               |           |           |          |          |          | TOTAL 46    |
|---------------|-------|------------|--|-----------|-------------|---------------|-----------|-----------|----------|----------|----------|-------------|
|               |       |            | GROUND WATER   |           |             | SURFACE WATER |           |           | BAYWATER |          |          |             |
| STATE         | FIPS  | COUNTY     | MIN  | MEAN      | MAX         | MIN           | MEAN      | MAX       | MIN      | MEAN     | MAX      |             |
| WEST VIRGINIA | 54021 | GREENBRIAR | 0.0  | 0.2       | 0.5         | 00            | 0.1       | 0.3       | -        | -        | -        | 0.4         |
| WEST VIRGINIA | 54027 | HAMPSHIRE  | 376.2  | 4,500.6   | 10,856.9    | 171.7         | 2,096.7   | 5,015.0   | -        | -        | -        | 6,597.3     |
| WEST VIRGINIA | 54031 | HARDY      | 461.9  | 3,447.2   | 7,878.9     | 210.2         | 1,611.6   | 3,566.3   | -        | -        | -        | 5,058.8     |
| WEST VIRGINIA | 54037 | JEFFERSON  | 23.2   | 5,500.1   | 13,810.3    | 7.4           | 1,720.4   | 4,304.2   | -        | -        | -        | 7,220.5     |
| WEST VIRGINIA | 54057 | MINERAL    | 53.3   | 2,549.6   | 6,284.1     | 23.7          | 1,124.3   | 2,732.6   | -        | -        | -        | 3,674.0     |
| WEST VIRGINIA | 54063 | MONROE     | 19.0   | 381.1     | 863.4       | 8.7           | 171.7     | 184.3     | -        | -        | -        | 552.9       |
| WEST VIRGINIA | 54065 | MORGAN     | -  | 993.6     | 3,091.4     | -             | 454.8     | 1,404.9   | -        | -        | -        | 1,448.5     |
| WEST VIRGINIA | 54071 | PENDELETON | 679.5  | 4,231.0   | 8,678.9     | 306.4         | 1,898.5   | 3,160.5   | -        | -        | -        | 6,129.5     |
| WEST VIRGINIA | 54075 | POCAHONTAS | 0.3  | 1.3       | 2.7         | 0.2           | 0.7       | 1.4       | -        | -        | -        | 2.0         |
| WEST VIRGINIA | 54077 | PRESTON    | -  | 18.0      | 43.9        | -             | 6.1       | 14.8      | -        | -        | -        | 24.1        |
| WEST VIRGINIA | 54083 | RANDOLPH   | 0.1  | 1.0       | 2.3         | 0.0           | 0.5       | 1.1       | -        | -        | -        | 1.5         |
| WEST VIRGINIA | 54093 | TUCKER     | -  | 0.6       | 1.3         | -             | 0.3       | 0.6       | -        | -        | -        | 1.0         |
| Grand Total   |       |            | 179,220.0  | 969,535.0 | 2,093,846.2 | 66,610.1      | 353,583.7 | 755,170.5 | 951.1    | 17,136.7 | 43,472.4 | 1,340,455.3 |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                 | 4. POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |          |           |               |          |          |           |         |          | TOTAL 4b |
|--|-------|-----------------|---|----------|-----------|---------------|----------|----------|-----------|---------|----------|----------|
| STATE  | FIPS  | COUNTY          | GROUND WATER  |          |           | SURFACE WATER |          |          | BAY WATER |         |          |          |
|  |       |                 | MIN   | MEAN     | MAX       | MIN           | MEAN     | MAX      | MIN       | MEAN    | MAX      |          |
| DELAWARE   | 10001 | KENT            | -   | 30       | 10.9      | -             | 1.1      | 3.9      | -         | -       | -        | 4.1      |
| DELAWARE   | 10003 | NEW CASTLE      | -   | 21       | 5.5       | -             | 0.6      | 1.5      | -         | -       | -        | 2.8      |
| DELAWARE   | 10005 | SUSSEX          | -   | 660.7    | 1,725.5   | -             | 224.6    | 572.0    | -         | 1.0     | 6.5      | 886.3    |
| DISTRICT OF COLUMBIA   | 11001 | WASHINGTON      | 439.5   | 25,422.4 | 75,715.7  | 156.1         | 8,720.0  | 25,650.0 | 307.7     | 1,911.1 | 4,776.2  | 36,053.5 |
| MARYLAND   | 24001 | ALLEGANY        | -   | 576.1    | 2,137.9   | -             | 224.5    | 839.4    | -         | -       | -        | 800.6    |
| MARYLAND   | 24003 | ANNE ARUNDEL    | 53.1  | 8,608.0  | 26,816.5  | 14.4          | 2,402.2  | 7,378.9  | -         | 3,164.0 | 10,081.5 | 14,174.2 |
| MARYLAND   | 24005 | BALTIMORE       | -   | 6,926.6  | 25,161.5  | -             | 2,214.2  | 7,957.8  | -         | 2,131.3 | 6,612.8  | 11,272.0 |
| MARYLAND   | 24009 | CALVERT         | -   | 141.4    | 360.9     | -             | 52.3     | 206.0    | -         | 136.6   | 507.1    | 330.3    |
| MARYLAND   | 24011 | CAROLINE        | -   | 17.7     | 125.6     | -             | 5.4      | 38.1     | -         | 10.0    | 58.1     | 33.0     |
| MARYLAND   | 24013 | CARROLL         | -   | 378.6    | 1,393.1   | -             | 134.7    | 663.5    | -         | -       | -        | 513.3    |
| MARYLAND   | 24015 | CECIL           | -   | 611.5    | 1,845.6   | -             | 201.7    | 608.9    | -         | 34.6    | 90.2     | 847.8    |
| MARYLAND   | 24017 | CHARLES         | -   | 1,191.7  | 4,182.9   | -             | 432.8    | 1,506.9  | -         | 1.0     | 14.1     | 1,625.6  |
| MARYLAND   | 24019 | DORCHESTER      | -   | 102.9    | 453.3     | -             | 34.0     | 148.1    | -         | 0.1     | 2.8      | 137.1    |
| MARYLAND   | 24021 | FREDERICK       | -   | 2,596.9  | 8,399.0   | -             | 929.1    | 2,992.7  | -         | -       | -        | 3,526.0  |
| MARYLAND   | 24023 | GARRETT         | -   | -        | -         | -             | -        | -        | -         | -       | -        | -        |
| MARYLAND   | 24025 | HARFORD         | -   | 819.9    | 3,673.4   | -             | 245.9    | 1,102.9  | -         | 48.3    | 278.2    | 1,114.1  |
| MARYLAND   | 24027 | HOWARD          | -   | 961.5    | 3,351.1   | -             | 347.1    | 1,180.9  | -         | -       | -        | 1,308.6  |
| MARYLAND   | 24029 | KENT            | -   | 99.5     | 332.2     | -             | 27.7     | 91.4     | -         | 5.4     | 17.8     | 132.6    |
| MARYLAND   | 24031 | MONTGOMERY      | 1.1   | 8,317.5  | 27,768.9  | 0.4           | 2,906.2  | 9,598.4  | -         | 104.7   | 426.1    | 11,321.4 |
| MARYLAND   | 24033 | PRINCE GEORGE'S | 273.4   | 14,229.4 | 43,778.7  | 91.2          | 4,895.1  | 14,982.1 | 52.3      | 406.2   | 920.0    | 19,530.7 |
| MARYLAND   | 24035 | QUEEN ANNE'S    | -   | -        | -         | -             | -        | -        | -         | -       | -        | -        |
| MARYLAND   | 24037 | SAINT MARY'S    | -   | 366.3    | 1,497.6   | -             | 127.4    | 516.1    | -         | 227.2   | 742.3    | 720.8    |
| MARYLAND   | 24039 | SOMERSET        | -   | 18.5     | 135.6     | -             | 6.6      | 48.1     | -         | 6.1     | 47.6     | 31.2     |
| MARYLAND   | 24041 | TALBOT          | -   | 248.0    | 960.5     | -             | 71.9     | 274.5    | -         | 22.6    | 82.4     | 342.6    |
| MARYLAND   | 24043 | WASHINGTON      | -   | 539.6    | 2,295.0   | -             | 167.4    | 706.1    | -         | -       | -        | 707.0    |
| MARYLAND   | 24045 | WICOMICO        | -   | 445.9    | 1,211.7   | -             | 138.3    | 378.2    | -         | 103.4   | 237.0    | 682.7    |
| MARYLAND   | 24047 | WORCESTER       | -   | 28.7     | 125.8     | -             | 11.8     | 51.0     | -         | -       | -        | 40.5     |
| MARYLAND   | 24010 | BALTIMORE CITY  | 3,647.7   | 68,976.1 | 188,451.6 | 1,191.1       | 22,437.2 | 60,541.1 | -         | 922.5   | 3,203.0  | 92,335.9 |
| NEW YORK   | 36003 | ALLEGANY        | -   | -        | -         | -             | -        | -        | -         | -       | -        | -        |
| NEW YORK   | 36007 | BROOME          | -   | 523.9    | 1,982.9   | -             | 290.3    | 1,087.7  | -         | -       | -        | 814.2    |
| NEW YORK   | 36011 | CAYUGA          | -   | -        | -         | -             | -        | -        | -         | -       | -        | -        |
| NEW YORK   | 36015 | CHEMUNG         | -   | 873.0    | 2,702.6   | -             | 423.3    | 1,293.3  | -         | -       | -        | 1,296.3  |
| NEW YORK   | 36017 | CHENANGO        | -   | 31.9     | 195.6     | -             | 17.7     | 107.7    | -         | -       | -        | 49.5     |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

|              |           |             | d. POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |         |          |               |         |         |           |      |     | TOTAL 4d |
|--------------|-----------|-------------|---|---------|----------|---------------|---------|---------|-----------|------|-----|----------|
|              |           |             | GROUND WATER  |         |          | SURFACE WATER |         |         | BAY WATER |      |     |          |
| STATE        | FIPS      | COUNTY      | MIN   | MEAN    | MAX      | MIN           | MEAN    | MAX     | MIN       | MEAN | MAX |          |
| NEW YORK     | 36023     | CORTLAND    | -   | 135.2   | 557.0    | -             | 73.1    | 294.1   | -         | -    | -   | 208.2    |
| NEW YORK     | 36025     | DELAWARE    | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| NEW YORK     | 36043     | HERKIMER    | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| NEW YORK     | 36051     | LIVINGSTON  | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| NEW YORK     | 36053     | MADISON     | -   | 330.7   | 963.2    | -             | 143.5   | 416.0   | -         | -    | -   | 474.1    |
| NEW YORK     | 36065     | ONEIDA EAST | -   | 13.0    | 490      | -             | 4.8     | 17.9    | -         | -    | -   | 17.8     |
| NEW YORK     | 36067     | ONONDAGA    | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| NEW YORK     | 36069     | ONTARIO     | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| NEW YORK     | 36077     | OTSEGO      | 52.2  | 64.4    | 76.7     | 27.6          | 33.5    | 39.4    | -         | -    | -   | 97.9     |
| NEW YORK     | 36095     | SCHOHARIE   | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| NEW YORK     | 36097     | SCHUYLER    | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| NEW YORK     | 36101     | STEUBEN     | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| NEW YORK     | 36107     | TIOGA       | -   | 356.5   | 1,226.0  | -             | 161.8   | 551.7   | -         | -    | -   | 518.2    |
| NEW YORK     | 36109     | TOMPKINS    | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| NEW YORK     | 36123     | YATES       | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| PENNSYLVANIA | 42001     | ADAMS       | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| PENNSYLVANIA | 42009     | BEDFORD     | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| PENNSYLVANIA | 42011     | BERKS       | -   | 0.6     | 5.3      | -             | 0.2     | 2.0     | -         | -    | -   | 0.8      |
| PENNSYLVANIA | 42,013.00 | BLAIR       | -   | 1,164.4 | 4,679.0  | -             | 446.3   | 1,772.7 | -         | -    | -   | 1,610.7  |
| PENNSYLVANIA | 42015     | BRADFORD    | -   | 184.0   | 771.8    | -             | 63.6    | 262.0   | -         | -    | -   | 247.7    |
| PENNSYLVANIA | 42021     | CAMBRIA     | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| PENNSYLVANIA | 42023     | CAMERON     | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| PENNSYLVANIA | 42025     | CARBON      | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| PENNSYLVANIA | 42027     | CENTRE      | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| PENNSYLVANIA | 42029     | CHESTER     | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| PENNSYLVANIA | 42031     | CLEARFIELD  | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| PENNSYLVANIA | 42033     | CLINTON     | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| PENNSYLVANIA | 42037     | COLUMBIA    | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| PENNSYLVANIA | 42041     | CUMBERLAND  | -   | 1,504.4 | 4,940.9  | -             | 531.9   | 1,758.1 | -         | -    | -   | 2,036.3  |
| PENNSYLVANIA | 42043     | DAUPHIN     | 622.1   | 5,146.1 | 14,871.7 | 228.2         | 1,973.1 | 5,694.6 | -         | -    | -   | 7,119.2  |
| PENNSYLVANIA | 42047     | ELK         | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| PENNSYLVANIA | 42055     | FRANKLIN    | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |
| PENNSYLVANIA | 42057     | FULTON      | -   | -       | -        | -             | -       | -       | -         | -    | -   | -        |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

|              |       |                | d. POUNDS OF NITROGEN LOADED BY UREAN POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |         |          |               |         |         |           |       |       | TOTAL #  |
|--------------|-------|----------------|---|---------|----------|---------------|---------|---------|-----------|-------|-------|----------|
|              |       |                | GROUND WATER  |         |          | SURFACE WATER |         |         | BAY WATER |       |       |          |
| STATE        | FIPS  | COUNTY         | MIN   | MEAN    | MAX      | MIN           | MEAN    | MAX     | MIN       | MEAN  | MAX   |          |
| PENNSYLVANIA | 42061 | HUNTINGDON     | -   | -       | -        | -             | -       | -       | -         | -     | -     | -        |
| PENNSYLVANIA | 42063 | INDIANA        | -   | -       | -        | -             | -       | -       | -         | -     | -     | -        |
| PENNSYLVANIA | 42065 | JEFFERSON      | -   | -       | -        | -             | -       | -       | -         | -     | -     | -        |
| PENNSYLVANIA | 42067 | JUNIATA        | -   | -       | -        | -             | -       | -       | -         | -     | -     | -        |
| PENNSYLVANIA | 42069 | LACKAWANNA     | -   | -       | -        | -             | -       | -       | -         | -     | -     | -        |
| PENNSYLVANIA | 42071 | LANCASTER      | 1,252.3   | 1,777.1 | 6,300.7  | -             | 1,018.8 | 3,574.0 | -         | -     | -     | 2,796.0  |
| PENNSYLVANIA | 42075 | LEBANON        | -   | 666.0   | 2,567.0  | 423.2         | 2,865.3 | 7,183.3 | -         | -     | -     | 11,593.6 |
| PENNSYLVANIA | 42079 | LUZERNE        | 330.7   | 4,031.6 | 13,389.9 | 133.3         | 221.4   | 855.8   | -         | -     | -     | 890.4    |
| PENNSYLVANIA | 42081 | LYCOMING       | 70.6  | 1,328.8 | 3,389.4  | 31.1          | 1,804.5 | 5,959.2 | -         | -     | -     | 5,838.1  |
| PENNSYLVANIA | 42083 | MCKEAN         | -   | -       | -        | -             | 591.6   | 1,522.8 | -         | -     | -     | 1,924.4  |
| PENNSYLVANIA | 42087 | MIFFLIN        | -   | -       | -        | -             | -       | -       | -         | -     | -     | -        |
| PENNSYLVANIA | 42093 | MONTOUR        | -   | 46.1    | 217.1    | -             | -       | -       | -         | -     | -     | -        |
| PENNSYLVANIA | 42097 | NORTHUMBERLAND | -   | 461.2   | 2,083.3  | -             | 14.4    | 76.2    | -         | -     | -     | 62.5     |
| PENNSYLVANIA | 42099 | PERRY          | -   | -       | -        | -             | 190.0   | 346.2   | -         | -     | -     | 651.2    |
| PENNSYLVANIA | 42105 | POTTER         | -   | -       | -        | -             | -       | -       | -         | -     | -     | -        |
| PENNSYLVANIA | 42107 | SCHUYLKILL     | -   | -       | -        | -             | -       | -       | -         | -     | -     | -        |
| PENNSYLVANIA | 42109 | SNYDER         | -   | 331.5   | 1,129.0  | -             | 141.5   | 476.5   | -         | -     | -     | 473.0    |
| PENNSYLVANIA | 42111 | SOMERSET       | -   | -       | -        | -             | -       | -       | -         | -     | -     | -        |
| PENNSYLVANIA | 42113 | SULLIVAN       | -   | -       | -        | -             | -       | -       | -         | -     | -     | -        |
| PENNSYLVANIA | 42115 | SUSQUEHANNA    | -   | -       | -        | -             | -       | -       | -         | -     | -     | -        |
| PENNSYLVANIA | 42117 | TIOGA          | -   | -       | -        | -             | -       | -       | -         | -     | -     | -        |
| PENNSYLVANIA | 42119 | UNION          | -   | 43.1    | 239.2    | -             | 204     | 112.1   | -         | -     | -     | 63.5     |
| PENNSYLVANIA | 42127 | WAYNE          | -   | -       | -        | -             | -       | -       | -         | -     | -     | -        |
| PENNSYLVANIA | 42131 | WYOMING        | -   | -       | -        | -             | -       | -       | -         | -     | -     | -        |
| PENNSYLVANIA | 42133 | YORK           | -   | 1,501.5 | 5,532.8  | -             | -       | -       | -         | -     | -     | -        |
| VIRGINIA     | 51001 | ACCOMACK       | -   | -       | -        | -             | 492.3   | 1,813.8 | -         | -     | -     | 1,993.8  |
| VIRGINIA     | 51003 | ALBEMARLE      | -   | 179.9   | 969.7    | -             | -       | -       | -         | -     | -     | -        |
| VIRGINIA     | 51005 | ALLEGHANY      | -   | -       | -        | -             | 91.5    | 313.4   | -         | -     | -     | 371.4    |
| VIRGINIA     | 51007 | AMELIA         | -   | -       | -        | -             | -       | -       | -         | -     | -     | -        |
| VIRGINIA     | 51009 | AMHERST        | -   | -       | -        | -             | -       | -       | -         | -     | -     | -        |
| VIRGINIA     | 51011 | APPOMATTOX     | -   | 581.4   | 1,670.9  | -             | 178.9   | 508.3   | -         | -     | -     | 760.2    |
| VIRGINIA     | 51013 | ARLINGTON      | -   | 2,428.9 | 8,837.1  | -             | -       | -       | -         | -     | -     | -        |
| VIRGINIA     | 51015 | AUGUSTA        | -   | 592.0   | 1,483.6  | -             | 868.2   | 2,664.2 | -         | 115.8 | 365.2 | 3,810.9  |
|              |       |                |   |         |          |               | 232.5   | 580.3   |           |       |       | 824.5    |

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc.  |       |                |              |          |          |               |         |          |           |       |         |                     |
|---|-------|----------------|--------------|----------|----------|---------------|---------|----------|-----------|-------|---------|---------------------|
| d. POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |       |                |              |          |          |               |         |          |           |       |         |                     |
| STATE   | FIPS  | COUNTY         | GROUND WATER |          |          | SURFACE WATER |         |          | BAY WATER |       |         | TOTAL <sup>4d</sup> |
|   |       |                | MIN          | MEAN     | MAX      | MIN           | MEAN    | MAX      | MIN       | MEAN  | MAX     |                     |
| VIRGINIA  | 51017 | BATH           | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51019 | BEDFORD        | -            | 317.6    | 956.7    | -             | 93.7    | 278.7    | -         | -     | -       | 411.3               |
| VIRGINIA  | 51023 | BOTETOURT      | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51029 | BUCKINGHAM     | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51031 | CAMPBELL       | -            | 31.7     | 204.0    | -             | 11.3    | 60.3     | -         | -     | -       | 49.0                |
| VIRGINIA  | 51033 | CAROLINE       | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51036 | CHARLES CITY   | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51037 | CHARLOTTE      | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51041 | CHESTERFIELD   | -            | 2,047.4  | 8,348.5  | -             | 677.3   | 2,775.1  | -         | 7.7   | 51.2    | 2,732.4             |
| VIRGINIA  | 51043 | CLARKE         | -            | 0.7      | 22.9     | -             | 0.2     | 7.3      | -         | -     | -       | 0.9                 |
| VIRGINIA  | 51045 | CRAIG          | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51047 | CULPEPER       | -            | 996.5    | 2,652.6  | -             | 315.6   | 836.8    | -         | -     | -       | 1,312.1             |
| VIRGINIA  | 51049 | CUMBERLAND     | -            | 1530     | 494.3    | -             | 36.4    | 121.7    | -         | -     | -       | 189.3               |
| VIRGINIA  | 51053 | DINWIDDIE      | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51057 | ESSEX          | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51059 | FAIRFAX        | 339.8        | 13,969.2 | 40,797.7 | 112.6         | 4,555.6 | 13,143.5 | -         | 192.7 | 579.7   | 18,717.6            |
| VIRGINIA  | 51061 | FAUQUIER       | -            | 330      | 216.1    | -             | 13.1    | 86.1     | -         | -     | -       | 46.1                |
| VIRGINIA  | 51065 | FLUVANNA       | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51069 | FREDERICK      | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51071 | GILES          | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51073 | GLOUCESTER     | -            | 481.9    | 1,602.4  | -             | 184.2   | 599.6    | -         | 407.2 | 1,358.4 | 1,073.3             |
| VIRGINIA  | 51075 | GOOCHLAND      | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51079 | GREENE         | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51085 | HANOVER        | -            | 801.8    | 3,506.3  | -             | 280.5   | 1,216.7  | -         | -     | -       | 1,082.3             |
| VIRGINIA  | 51087 | HENRICO        | -            | 1,722.2  | 6,703.3  | -             | 539.4   | 2,094.7  | -         | 4.0   | 20.2    | 2,265.6             |
| VIRGINIA  | 51091 | HIGHLAND       | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51093 | ISLE OF WIGHT  | -            | 223      | 155.4    | -             | 8.7     | 60.1     | -         | -     | -       | -                   |
| VIRGINIA  | 51095 | JAMES CITY     | -            | 211.3    | 840.9    | -             | 91.1    | 358.4    | -         | 4.9   | 34.0    | 35.8                |
| VIRGINIA  | 51097 | KING AND QUEEN | -            | -        | -        | -             | -       | -        | -         | -     | -       | 302.4               |
| VIRGINIA  | 51099 | KING GEORGE    | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51101 | KING WILLIAM   | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51103 | LANCASTER      | -            | -        | -        | -             | -       | -        | -         | -     | -       | -                   |
| VIRGINIA  | 51107 | LOUDOUN        | -            | 137.0    | 622.6    | -             | 44.0    | 196.8    | -         | -     | -       | 181.0               |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCR:CHESAPEAKE, Inc. |       |                 | d. POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |         |         |               |       |         |           |      |       |          |
|---|-------|-----------------|---|---------|---------|---------------|-------|---------|-----------|------|-------|----------|
|   |       |                 | GROUND WATER  |         |         | SURFACE WATER |       |         | BAY WATER |      |       | TOTAL 4d |
| STATE   | FIPS  | COUNTY          | MIN   | MEAN    | MAX     | MIN           | MEAN  | MAX     | MIN       | MEAN | MAX   |          |
| VIRGINIA  | 51109 | LOUISA          | .   | .       | .       | .             | .     | .       | .         | .    | .     | .        |
| VIRGINIA  | 51111 | LUNENBERG       | .   | .       | .       | .             | .     | .       | .         | .    | .     | .        |
| VIRGINIA  | 51113 | MADISON         | .   | .       | .       | .             | .     | .       | .         | .    | .     | .        |
| VIRGINIA  | 51115 | MATHEWS         | .   | .       | .       | .             | .     | .       | .         | .    | .     | .        |
| VIRGINIA  | 51119 | MIDDLESEX       | .   | .       | .       | .             | .     | .       | .         | .    | .     | .        |
| VIRGINIA  | 51121 | MONTGOMERY      | .   | .       | .       | .             | .     | .       | .         | .    | .     | .        |
| VIRGINIA  | 51125 | NELSON          | .   | .       | .       | .             | .     | .       | .         | .    | .     | .        |
| VIRGINIA  | 51127 | NEW KENT        | .   | .       | .       | .             | .     | .       | .         | .    | .     | .        |
| VIRGINIA  | 51131 | NORTHAMPTON     | .   | .       | .       | .             | .     | .       | .         | .    | .     | .        |
| VIRGINIA  | 51133 | NORTHUMBERLAND  | .   | .       | .       | .             | .     | .       | .         | .    | .     | .        |
| VIRGINIA  | 51135 | NOTTOWAY        | .   | .       | .       | .             | .     | .       | .         | .    | .     | .        |
| VIRGINIA  | 51137 | ORANGE          | .   | 15.2    | 139.7   | .             | 5.0   | 44.8    | .         | .    | .     | 20.2     |
| VIRGINIA  | 51139 | PAGE            | .   | 16.2    | 111.2   | .             | 5.0   | 41.9    | .         | .    | .     | 22.3     |
| VIRGINIA  | 51145 | POWHATAN        | .   | .       | .       | .             | .     | .       | .         | .    | .     | .        |
| VIRGINIA  | 51147 | PRINCE EDWARD   | .   | 24.8    | 137.9   | .             | 11.7  | 64.1    | .         | .    | .     | 36.5     |
| VIRGINIA  | 51149 | PRINCE GEORGE   | .   | 396.7   | 1,227.3 | .             | 127.2 | 392.0   | .         | 0.2  | 2.3   | 524.1    |
| VIRGINIA  | 51153 | PRINCE WILLIAM  | .   | 1,312.6 | 5,001.1 | .             | 401.9 | 1,530.4 | .         | 48.4 | 190.9 | 1,762.9  |
| VIRGINIA  | 51157 | RAPPAHANNOCK    | .   | .       | .       | .             | .     | .       | .         | .    | .     | .        |
| VIRGINIA  | 51159 | RICHMOND        | .   | .       | .       | .             | .     | .       | .         | .    | .     | .        |
| VIRGINIA  | 51161 | ROANOKE         | .   | .       | .       | .             | .     | 1       | .         | .    | .     | .        |
| VIRGINIA  | 51163 | ROCKBRIDGE      | .   | .       | .       | .             | .     | .       | .         | .    | .     | .        |
| VIRGINIA  | 51165 | ROCKINGHAM      | .   | .       | .       | .             | .     | .       | .         | .    | .     | .        |
| VIRGINIA  | 51171 | SHENANDOAH      | .   | 156.1   | 781.5   | .             | 55.4  | 276.4   | .         | .    | .     | 212.5    |
| VIRGINIA  | 51177 | SPOTSYLVANIA    | .   | 78.7    | 574.5   | .             | 26.7  | 180.3   | .         | 2.9  | 31.8  | 106.3    |
| VIRGINIA  | 51179 | STAFFORD        | .   | 252.0   | 1,227.8 | .             | 81.4  | 429.4   | .         | 20.7 | 109.2 | 361.0    |
| VIRGINIA  | 51181 | SURRY           | .   | .       | .       | .             | .     | .       | .         | .    | .     | .        |
| VIRGINIA  | 51187 | WARREN          | .   | 13.8    | 137.9   | .             | 6.4   | 61.0    | .         | .    | .     | 20.2     |
| VIRGINIA  | 51193 | WESTMORELAND    | .   | 2.5     | 13.0    | .             | 1.4   | 7.2     | .         | 38.1 | 196.6 | 42.0     |
| VIRGINIA  | 51199 | YORK            | .   | 318.3   | 1,232.5 | .             | 187.1 | 709.2   | .         | 27.7 | 142.8 | 533.1    |
| VIRGINIA  | 51510 | ALEXANDRIA      | 208.7   | 1,650.1 | 4,576.2 | 55.3          | 434.3 | 1,180.2 | .         | 0.2  | 0.9   | 2,080.6  |
| VIRGINIA  | 51530 | BUENA VISTA     | .   | 345.2   | 1,331.3 | .             | 157.0 | 598.5   | .         | .    | .     | 502.2    |
| VIRGINIA  | 51540 | CHARLOTTESVILLE | .   | 1,153.2 | 3,325.4 | .             | 377.0 | 1,074.8 | .         | .    | .     | 1,530.1  |
| VIRGINIA  | 51550 | CHESAPEAKE CITY | .   | 1,841.9 | 6,721.7 | .             | 961.6 | 3,473.4 | .         | 59.0 | 217.1 | 2,862.6  |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

| d. POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |       |                     |              |         |          |               |         |         |           |       |         |         |
|---|-------|---------------------|--------------|---------|----------|---------------|---------|---------|-----------|-------|---------|---------|
| STATE   | FIPS  | COUNTY              | GROUND WATER |         |          | SURFACE WATER |         |         | BAY WATER |       |         | TOTAL** |
|   |       |                     | MIN          | MEAN    | MAX      | MIN           | MEAN    | MAX     | MIN       | MEAN  | MAX     |         |
| VIRGINIA  | 51560 | CLIFTON FORGE       | -            | -       | -        | -             | -       | -       | -         | -     | -       | -       |
| VIRGINIA  | 51570 | COLONIAL HEIGHTS    | -            | -       | -        | -             | -       | -       | -         | -     | -       | -       |
| VIRGINIA  | 51580 | COVINGTON           | -            | -       | -        | -             | -       | -       | -         | -     | -       | -       |
| VIRGINIA  | 51600 | FAIRFAX             | -            | -       | -        | -             | -       | -       | -         | -     | -       | -       |
| VIRGINIA  | 51610 | FALLS CHURCH        | -            | 83.8    | 373.3    | -             | 29.4    | 129.6   | -         | -     | -       | -       |
| VIRGINIA  | 51630 | FREDERICKSBURG      | -            | 455.6   | 1,169.7  | -             | 135.9   | 344.9   | -         | -     | -       | 113.2   |
| VIRGINIA  | 51650 | HAMPTON CITY        | -            | 48.2    | 219.1    | -             | 17.2    | 77.5    | -         | -     | -       | 591.2   |
| VIRGINIA  | 51660 | HARRISONBURG        | -            | 2,190.8 | 6,236.4  | -             | 1,270.9 | 3,580.4 | -         | 43.5  | 195.5   | 109.0   |
| VIRGINIA  | 51670 | HOPEWELL            | -            | 252.7   | 952.9    | -             | 94.1    | 350.7   | -         | 64.8  | 271.9   | 3,526.5 |
| VIRGINIA  | 51671 | LEXINGTON           | 368.0        | 1,601.6 | 3,646.0  | 123.0         | 526.5   | 1,185.0 | -         | -     | -       | 346.8   |
| VIRGINIA  | 51680 | LYNCHBURG           | -            | -       | -        | -             | -       | -       | -         | -     | -       | 2,128.1 |
| VIRGINIA  | 51681 | MANASSES CITY       | -            | 689.3   | 2,350.4  | -             | 211.6   | 714.6   | -         | -     | -       | -       |
| VIRGINIA  | 51681 | MANASSES PARK CITY  | -            | 186.2   | 574.9    | -             | 55.2    | 168.5   | -         | -     | -       | 900.9   |
| VIRGINIA  | 51700 | NEWPORT NEWS CITY   | -            | -       | -        | -             | -       | -       | -         | -     | -       | 241.4   |
| VIRGINIA  | 51710 | NORFOLK CITY        | 93.1         | 2,020.6 | 6,420.3  | 46.1          | 983.0   | 3,110.3 | -         | -     | -       | -       |
| VIRGINIA  | 51730 | PETERSBURG          | 94.7         | 4,137.7 | 12,754.1 | 53.6          | 2,304.8 | 7,023.9 | 49.6      | 332.6 | 711.6   | 3,336.2 |
| VIRGINIA  | 51735 | POQUOSON            | -            | 542.4   | 2,006.6  | -             | 170.1   | 622.9   | -         | 502.3 | 1,589.6 | 6,944.8 |
| VIRGINIA  | 51740 | PORTSMOUTH CITY     | -            | 30.7    | 144.4    | -             | 20.5    | 95.1    | -         | -     | -       | 712.5   |
| VIRGINIA  | 51760 | RICHMOND CITY       | -            | 2,733.4 | 9,274.6  | -             | 1,504.4 | 5,036.9 | -         | 49.4  | 229.6   | 100.6   |
| VIRGINIA  | 51790 | STAUNTON            | 52.1         | 4,711.2 | 14,639.3 | 17.4          | 1,678.8 | 5,129.0 | -         | 247.8 | 948.9   | 4,485.6 |
| VIRGINIA  | 51800 | SUFFOLK CITY        | -            | 590.5   | 2,120.5  | -             | 219.1   | 777.8   | -         | -     | -       | 6,389.9 |
| VIRGINIA  | 51810 | VIRGINIA BEACH CITY | 1,360.0      | 5,917.7 | 12,454.7 | 623.1         | 2,660.2 | 5,539.4 | 163.4     | 660.6 | 1,391.4 | 809.6   |
| VIRGINIA  | 51820 | WAYNESBORO          | -            | 1,963.8 | 6,731.6  | -             | 804.7   | 2,764.8 | -         | -     | -       | 9,238.5 |
| VIRGINIA  | 51830 | WILLIAMSBURG        | -            | 638.1   | 2,169.7  | -             | 243.6   | 819.6   | -         | 499.7 | 1,455.7 | 3,268.2 |
| VIRGINIA  | 51840 | WINCHESTER          | -            | 60.3    | 298.4    | -             | 24.8    | 121.5   | -         | -     | -       | 881.7   |
| WEST VIRGINIA   | 54003 | BERKELEY            | -            | -       | -        | -             | -       | -       | -         | -     | -       | 85.1    |
| WEST VIRGINIA   | 54023 | GRANT               | -            | 394.6   | 840.8    | -             | 153.8   | 322.2   | -         | -     | -       | -       |
| WEST VIRGINIA   | 54025 | GREENBRIAR          | -            | -       | -        | -             | -       | -       | -         | -     | -       | 548.4   |
| WEST VIRGINIA   | 54027 | HAMPSHIRE           | -            | -       | -        | -             | -       | -       | -         | -     | -       | -       |
| WEST VIRGINIA   | 54031 | HARDY               | -            | -       | -        | -             | -       | -       | -         | -     | -       | -       |
| WEST VIRGINIA   | 54037 | JEFFERSON           | -            | -       | -        | -             | -       | -       | -         | -     | -       | -       |
| WEST VIRGINIA   | 54057 | MINERAL             | -            | -       | -        | -             | -       | -       | -         | -     | -       | -       |
| WEST VIRGINIA   | 54063 | MONROE              | -            | 333.6   | 1,354.5  | -             | 170.8   | 699.9   | -         | -     | -       | 504.5   |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |            | 4. POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |                  |                  |                |                 |                  |              |                 |                 | TOTAL #          |
|--|-------|------------|---|------------------|------------------|----------------|-----------------|------------------|--------------|-----------------|-----------------|------------------|
| STATE  | FIPS  | COUNTY     | GROUND WATER  |                  |                  | SURFACE WATER  |                 |                  | BAY WATER    |                 |                 |                  |
|  |       |            | MIN   | MEAN             | MAX              | MIN            | MEAN            | MAX              | MIN          | MEAN            | MAX             |                  |
| WEST VIRGINIA  | 54065 | MORGAN     | .   | .                | .                | .              | .               | .                | .            | .               | .               | .                |
| WEST VIRGINIA  | 54071 | PENDLETON  | .   | .                | .                | .              | .               | .                | .            | .               | .               | .                |
| WEST VIRGINIA  | 54075 | POCAHONTAS | .   | .                | .                | .              | .               | .                | .            | .               | .               | .                |
| WEST VIRGINIA  | 54077 | PRESTON    | .   | .                | .                | .              | .               | .                | .            | .               | .               | .                |
| WEST VIRGINIA  | 54083 | RANDOLPH   | .   | .                | .                | .              | .               | .                | .            | .               | .               | .                |
| WEST VIRGINIA  | 54093 | TUCKER     | .   | .                | .                | .              | .               | .                | .            | .               | .               | .                |
| <b>Grand Total</b>   |       |            | <b>9,259.2</b>  | <b>233,908.0</b> | <b>706,064.0</b> | <b>3,327.6</b> | <b>82,837.4</b> | <b>248,336.9</b> | <b>573.0</b> | <b>12,544.5</b> | <b>38,198.1</b> | <b>329,309.9</b> |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AT THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

|                      |       |                 | c. POUNDS OF NITROGEN LOADED BY RURAL NONFARM POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |          |          |               |         |          |           |         |         | TOTAL <sup>4c</sup> |
|----------------------|-------|-----------------|---|----------|----------|---------------|---------|----------|-----------|---------|---------|---------------------|
|                      |       |                 | GROUNDWATER   |          |          | SURFACE WATER |         |          | BAY WATER |         |         |                     |
| STATE                | FIPS  | COUNTY          | MIN   | MEAN     | MAX      | MIN           | MEAN    | MAX      | MIN       | MEAN    | MAX     |                     |
| DELAWARE             | 10001 | KENT            | 132.3   | 1,762.7  | 4,503.1  | 8.1           | 614.7   | 1,571.8  | -         | -       | -       | 2,377.4             |
| DELAWARE             | 10003 | NEW CASTLE      | -   | 142.2    | 419.5    | -             | 51.2    | 148.3    | -         | -       | -       | 193.4               |
| DELAWARE             | 10005 | SUSSEX          | 572.7   | 7,170.6  | 16,344.4 | 178.5         | 2,237.7 | 5,042.6  | 5.1       | 118.5   | 281.5   | 9,526.7             |
| DISTRICT OF COLUMBIA | 11001 | WASHINGTON      | -   | -        | -        | -             | -       | -        | -         | -       | -       | -                   |
| MARYLAND             | 24001 | ALLEGANY        | -   | 2,841.1  | 9,243.2  | -             | 1,247.4 | 4,016.9  | -         | -       | -       | 4,088.5             |
| MARYLAND             | 24003 | ANNE ARUNDEL    | -   | 3,269.8  | 10,496.7 | -             | 1,052.0 | 3,307.7  | -         | 488.8   | 1,800.4 | 4,810.6             |
| MARYLAND             | 24005 | BALTIMORE       | -   | 6,334.5  | 19,429.2 | -             | 2,203.3 | 6,672.3  | -         | 119.0   | 409.7   | 8,656.8             |
| MARYLAND             | 24009 | CALVERT         | 1,047.7   | 7,235.3  | 16,766.2 | 313.5         | 2,647.4 | 6,072.9  | 123.9     | 1,185.5 | 2,990.1 | 11,068.2            |
| MARYLAND             | 24011 | CAROLINE        | 190.5   | 4,418.6  | 11,670.2 | 67.3          | 1,430.3 | 3,716.3  | -         | 200.0   | 591.2   | 6,049.0             |
| MARYLAND             | 24013 | CARROLL         | 91.7  | 9,582.2  | 28,223.0 | 13.2          | 3,514.5 | 10,238.2 | -         | -       | -       | 13,096.7            |
| MARYLAND             | 24015 | CECIL           | 27.4  | 7,153.5  | 20,115.6 | 8.8           | 2,299.6 | 6,412.3  | -         | 539.4   | 1,956.1 | 9,992.5             |
| MARYLAND             | 24017 | CHARLES         | 3,494.2   | 16,275.0 | 34,628.6 | 1,318.2       | 5,980.5 | 12,591.0 | 393.6     | 1,626.0 | 3,522.6 | 23,881.6            |
| MARYLAND             | 24019 | DORCHESTER      | 185.4   | 4,820.2  | 11,611.1 | 102.9         | 1,810.1 | 4,284.9  | 175.8     | 1,625.1 | 3,808.1 | 8,255.5             |
| MARYLAND             | 24021 | FREDERICK       | 299.8   | 11,802.6 | 33,626.2 | 34.5          | 3,710.8 | 10,375.5 | -         | -       | -       | 15,513.4            |
| MARYLAND             | 24023 | GARRETT         | 12.5  | 1,121.6  | 2,899.6  | 4.8           | 400.7   | 1,020.8  | -         | -       | -       | 1,522.3             |
| MARYLAND             | 24025 | HARFORD         | 411.2   | 8,772.1  | 23,967.4 | 136.2         | 2,836.5 | 7,617.0  | 15.3      | 205.0   | 542.3   | 11,813.6            |
| MARYLAND             | 24027 | HOWARD          | 27.8  | 3,028.2  | 9,426.3  | 9.9           | 1,076.2 | 3,326.1  | -         | -       | -       | 4,104.4             |
| MARYLAND             | 24029 | KENT            | 64.9  | 3,134.3  | 8,535.0  | 19.2          | 977.8   | 2,637.5  | 3.8       | 909.5   | 2,472.0 | 5,021.6             |
| MARYLAND             | 24031 | MONTGOMERY      | -   | 2,488.5  | 7,911.0  | -             | 891.2   | 2,822.6  | -         | -       | -       | 3,379.7             |
| MARYLAND             | 24033 | PRINCE GEORGE'S | -   | 2,223.0  | 6,380.3  | -             | 816.1   | 2,328.2  | -         | 138.3   | 357.6   | 3,177.4             |
| MARYLAND             | 24035 | QUEEN ANNE'S    | 92.7  | 3,638.4  | 9,681.5  | 27.4          | 1,121.6 | 2,962.5  | 0.1       | 1,391.8 | 3,733.2 | 6,151.9             |
| MARYLAND             | 24037 | SANT MARY'S     | 442.4   | 8,311.7  | 21,060.5 | 158.6         | 2,970.6 | 7,430.8  | 1.0       | 1,395.3 | 4,172.6 | 12,677.6            |
| MARYLAND             | 24039 | SOMERSET        | -   | 2,209.9  | 5,976.5  | -             | 808.6   | 2,212.5  | -         | 510.4   | 1,644.7 | 3,529.0             |
| MARYLAND             | 24041 | TALBOT          | -   | 1,511.7  | 4,435.0  | -             | 480.9   | 1,527.1  | -         | 685.7   | 2,702.4 | 2,678.4             |
| MARYLAND             | 24043 | WASHINGTON      | 399.1   | 8,840.4  | 22,534.9 | 126.0         | 3,008.3 | 7,618.7  | -         | -       | -       | 11,848.7            |
| MARYLAND             | 24045 | WICOMICO        | -   | 3,958.5  | 11,202.4 | -             | 1,375.6 | 3,878.8  | -         | 425.7   | 1,146.4 | 5,759.9             |
| MARYLAND             | 24047 | WORCESTER       | -   | 1,352.0  | 3,756.9  | -             | 547.5   | 1,519.8  | -         | 6.8     | 26.2    | 1,906.4             |
| MARYLAND             | 24510 | BALTIMORE CITY  | -   | -        | -        | -             | -       | -        | -         | -       | -       | -                   |
| NEW YORK             | 36001 | ALLEGANY        | -   | 215.8    | 911.9    | -             | 99.2    | 414.7    | -         | -       | -       | 315.1               |
| NEW YORK             | 36007 | BROOME          | -   | 2,365.7  | 8,365.6  | -             | 1,173.6 | 4,125.8  | -         | -       | -       | 3,539.2             |
| NEW YORK             | 36011 | CAYUGA          | -   | 0.0      | 0.1      | -             | 0.0     | 0.0      | -         | -       | -       | 0.0                 |
| NEW YORK             | 36015 | CHENUNGO        | -   | 1,399.9  | 4,717.8  | -             | 662.1   | 2,198.9  | -         | -       | -       | 2,062.0             |
| NEW YORK             | 36017 | CHENANGO        | 247.9   | 6,346.7  | 18,087.5 | 113.8         | 2,934.8 | 8,267.2  | -         | -       | -       | 9,281.5             |
| NEW YORK             | 36021 | CORTLAND        | 134.9   | 2,871.4  | 7,741.4  | 64.9          | 1,363.5 | 3,624.5  | -         | -       | -       | 4,234.9             |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

|              |           |             | e. POUNDS OF NITROGEN LOADED BY RURAL NONFARM POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |          |          |               |         |          |           |      |     | TOTAL 4e |
|--------------|-----------|-------------|---|----------|----------|---------------|---------|----------|-----------|------|-----|----------|
|              |           |             | GROUNDWATER   |          |          | SURFACE WATER |         |          | BAY WATER |      |     |          |
| STATE        | FIPS      | COUNTY      | MIN   | MEAN     | MAX      | MIN           | MEAN    | MAX      | MIN       | MEAN | MAX |          |
| NEW YORK     | 36025     | DELAWARE    | -   | 1,076.0  | 3,312.0  | -             | 512.0   | 1,561.7  | -         | -    | -   | 1,588.0  |
| NEW YORK     | 36043     | HERKIMER    | -   | 198.4    | 808.3    | -             | 80.2    | 320.5    | -         | -    | -   | 278.6    |
| NEW YORK     | 36051     | LIVINGSTON  | -   | 36.8     | 150.7    | -             | 17.2    | 69.8     | -         | -    | -   | 54.0     |
| NEW YORK     | 36053     | MADISON     | 25.2  | 2,111.2  | 5,628.7  | 12.1          | 975.0   | 2,568.7  | -         | -    | -   | 3,086.2  |
| NEW YORK     | 36065     | ONEIDA EAST | -   | 124.7    | 521.7    | -             | 51.7    | 214.6    | -         | -    | -   | 176.3    |
| NEW YORK     | 36067     | ONONDAGA    | -   | 233.3    | 753.6    | -             | 102.3   | 301.3    | -         | -    | -   | 315.7    |
| NEW YORK     | 36069     | ONTARIO     | -   | -        | -        | -             | -       | -        | -         | -    | -   | -        |
| NEW YORK     | 36077     | OTSEGO      | -   | 3,345.8  | 11,819.2 | -             | 1,469.1 | 5,105.8  | -         | -    | -   | 4,814.9  |
| NEW YORK     | 36095     | SCHOHARIE   | -   | 225.6    | 791.1    | -             | 110.2   | 338.3    | -         | -    | -   | 365.7    |
| NEW YORK     | 36097     | SCHUYLER    | -   | 735.2    | 1,969.0  | -             | 340.3   | 898.5    | -         | -    | -   | 1,075.4  |
| NEW YORK     | 36101     | STEUBEN     | 1,224.5   | 12,174.2 | 30,028.7 | 604.9         | 5,813.7 | 14,072.2 | -         | -    | -   | 17,977.8 |
| NEW YORK     | 36107     | TIOGA       | -   | 4,382.1  | 12,687.0 | -             | 2,014.5 | 5,770.1  | -         | -    | -   | 6,396.6  |
| NEW YORK     | 36109     | TOMPKINS    | -   | 552.5    | 1,347.2  | -             | 253.0   | 615.2    | -         | -    | -   | 809.6    |
| NEW YORK     | 36123     | YATES       | -   | 51.5     | 152.9    | -             | 29.2    | 75.5     | -         | -    | -   | 87.8     |
| PENNSYLVANIA | 42001     | ADAMS       | 1,970.5   | 9,321.9  | 19,729.3 | 595.9         | 2,833.7 | 5,942.8  | -         | -    | -   | 12,157.6 |
| PENNSYLVANIA | 42009     | BEDFORD     | 1,345.6   | 6,984.3  | 14,822.9 | 560.0         | 2,771.8 | 5,792.2  | -         | -    | -   | 9,756.1  |
| PENNSYLVANIA | 42011     | BERKS       | 7.9   | 1,001.7  | 2,904.1  | 3.0           | 364.3   | 1,034.3  | -         | -    | -   | 1,379.0  |
| PENNSYLVANIA | 41,013.00 | BLAIR       | 406.7   | 5,488.9  | 15,139.6 | 153.8         | 2,137.9 | 5,859.8  | -         | -    | -   | 7,627.8  |
| PENNSYLVANIA | 42015     | BRADFORD    | 5,628.4   | 12,843.5 | 22,569.9 | 2,866.3       | 6,404.4 | 11,094.0 | -         | -    | -   | 19,247.9 |
| PENNSYLVANIA | 42021     | CAMBRIA     | 2,730.5   | 7,574.8  | 14,135.0 | 1,074.4       | 2,934.4 | 5,416.4  | -         | -    | -   | 10,505.3 |
| PENNSYLVANIA | 42023     | CAMERON     | 731.8   | 2,798.6  | 5,585.3  | 258.4         | 967.4   | 1,907.1  | -         | -    | -   | 3,766.0  |
| PENNSYLVANIA | 42025     | CARBON      | 0.0   | 0.2      | 0.5      | 0.0           | 0.1     | 0.2      | -         | -    | -   | 0.3      |
| PENNSYLVANIA | 42027     | CENTRE      | 1,032.5   | 6,339.3  | 15,191.3 | 394.1         | 2,377.1 | 5,624.4  | -         | -    | -   | 8,716.4  |
| PENNSYLVANIA | 42029     | CHESTER     | 234.6   | 2,547.7  | 5,833.8  | 77.3          | 852.1   | 1,938.5  | -         | -    | -   | 3,399.8  |
| PENNSYLVANIA | 42033     | CLEARFIELD  | 4,085.5   | 14,263.6 | 28,873.1 | 1,585.7       | 5,415.0 | 10,823.8 | -         | -    | -   | 19,678.6 |
| PENNSYLVANIA | 42035     | CLINTON     | 4,081.9   | 8,421.6  | 14,067.3 | 1,520.9       | 3,226.7 | 5,509.5  | -         | -    | -   | 11,648.3 |
| PENNSYLVANIA | 42037     | COLUMBIA    | 593.2   | 4,700.1  | 10,862.5 | 229.1         | 1,835.2 | 4,239.7  | -         | -    | -   | 6,535.3  |
| PENNSYLVANIA | 42041     | CUMBERLAND  | 1,287.7   | 8,156.4  | 15,701.1 | 489.9         | 2,980.2 | 7,040.6  | -         | -    | -   | 11,136.5 |
| PENNSYLVANIA | 42043     | DAUPHIN     | 683.2   | 8,438.0  | 20,854.0 | 229.7         | 2,879.9 | 7,067.8  | -         | -    | -   | 11,317.9 |
| PENNSYLVANIA | 42047     | ELK         | 44.1  | 881.7    | 2,302.4  | 16.0          | 311.1   | 803.8    | -         | -    | -   | 1,192.1  |
| PENNSYLVANIA | 42055     | FRANKLIN    | 2,210.8   | 10,624.4 | 25,277.6 | 981.7         | 4,191.5 | 9,577.8  | -         | -    | -   | 14,815.9 |
| PENNSYLVANIA | 42057     | FULTON      | 320.8   | 2,106.5  | 4,358.6  | 138.3         | 873.5   | 1,781.3  | -         | -    | -   | 2,980.6  |
| PENNSYLVANIA | 42061     | HUNTINGDON  | 1,419.1   | 6,870.2  | 14,380.7 | 599.2         | 2,748.1 | 5,653.9  | -         | -    | -   | 9,618.3  |
| PENNSYLVANIA | 42063     | INDIANA     | 535.2   | 1,640.9  | 3,038.2  | 213.1         | 640.6   | 1,172.1  | -         | -    | -   | 2,281.4  |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc.          |       |                |             |          |          |               |         |          |           |         |         |          |
|---|-------|----------------|-------------|----------|----------|---------------|---------|----------|-----------|---------|---------|----------|
| e. POUNDS OF NITROGEN LOADED BY RURAL NONFARM POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |       |                |             |          |          |               |         |          |           |         |         |          |
| STATE   | FIPS  | COUNTY         | GROUNDWATER |          |          | SURFACE WATER |         |          | BAY WATER |         |         | TOTAL 4e |
|   |       |                | MIN         | MEAN     | MAX      | MIN           | MEAN    | MAX      | MIN       | MEAN    | MAX     |          |
| PENNSYLVANIA  | 42065 | JEFFERSON      | 1.2         | 2.7      | 4.7      | 0.4           | 0.9     | 1.6      | -         | -       | -       | 3.6      |
| PENNSYLVANIA  | 42067 | JUNIATA        | 1,078.8     | 3,946.2  | 7,731.8  | 416.0         | 1,612.1 | 3,117.5  | -         | -       | -       | 5,558.3  |
| PENNSYLVANIA  | 42069 | LACKAWANNA     | 505.2       | 4,162.2  | 10,364.5 | 279.5         | 2,263.8 | 5,562.4  | -         | -       | -       | 6,426.0  |
| PENNSYLVANIA  | 42071 | LANCASTER      | 1,209.7     | 21,742.8 | 54,757.7 | 409.1         | 7,232.9 | 18,006.0 | -         | -       | -       | 28,975.7 |
| PENNSYLVANIA  | 42075 | LEBANON        | -           | 2,779.5  | 8,135.9  | -             | 1,013.7 | 2,945.0  | -         | -       | -       | 3,793.2  |
| PENNSYLVANIA  | 42079 | LUZERNE        | 933.3       | 8,644.0  | 22,194.5 | 458.1         | 4,148.0 | 10,516.0 | -         | -       | -       | 12,791.9 |
| PENNSYLVANIA  | 42081 | LYCOMING       | 1,719.1     | 9,857.8  | 21,178.1 | 748.3         | 4,067.0 | 8,583.3  | -         | -       | -       | 13,924.8 |
| PENNSYLVANIA  | 42083 | MCKEAN         | 0.1         | 19.8     | 57.1     | 0.1           | 7.0     | 19.8     | -         | -       | -       | 26.8     |
| PENNSYLVANIA  | 42087 | MIFFLIN        | 1,385.8     | 7,532.1  | 17,011.7 | 542.7         | 3,060.0 | 6,883.8  | -         | -       | -       | 10,592.2 |
| PENNSYLVANIA  | 42093 | MONTOUR        | 122.3       | 1,330.9  | 2,965.5  | 46.5          | 489.1   | 1,075.5  | -         | -       | -       | 1,820.0  |
| PENNSYLVANIA  | 42097 | NORTHUMBERLAND | 509.8       | 5,058.0  | 11,998.2 | 204.5         | 2,003.9 | 4,688.6  | -         | -       | -       | 7,061.9  |
| PENNSYLVANIA  | 42099 | PERRY          | 3,177.0     | 8,824.2  | 17,195.8 | 1,352.0       | 3,643.4 | 6,977.4  | -         | -       | -       | 12,467.5 |
| PENNSYLVANIA  | 42105 | POTTER         | 689.0       | 2,595.2  | 5,211.5  | 264.4         | 993.0   | 1,981.5  | -         | -       | -       | 3,528.2  |
| PENNSYLVANIA  | 42107 | SCHUYLKILL     | 2,019.4     | 8,835.0  | 19,148.1 | 839.0         | 3,388.0 | 7,151.6  | -         | -       | -       | 12,223.0 |
| PENNSYLVANIA  | 42109 | SNYDER         | 3,917.3     | 8,048.6  | 13,758.4 | 1,614.6       | 3,327.9 | 5,744.0  | -         | -       | -       | 11,376.5 |
| PENNSYLVANIA  | 42111 | SOMERSET       | 141.0       | 782.2    | 1,603.0  | 54.6          | 296.5   | 600.4    | -         | -       | -       | 1,078.7  |
| PENNSYLVANIA  | 42113 | SULLIVAN       | 31.0        | 1,149.3  | 2,654.6  | 16.9          | 613.1   | 1,400.0  | -         | -       | -       | 1,762.4  |
| PENNSYLVANIA  | 42115 | SUSQUEHANNA    | 2,921.6     | 8,168.6  | 15,379.6 | 1,496.2       | 4,144.2 | 7,729.7  | -         | -       | -       | 12,312.8 |
| PENNSYLVANIA  | 42117 | TIOGA          | 2,220.4     | 7,426.1  | 14,369.7 | 1,684.9       | 3,581.1 | 6,853.0  | -         | -       | -       | 11,007.2 |
| PENNSYLVANIA  | 42119 | UNION          | 563.9       | 2,545.1  | 5,438.1  | 724.4         | 954.3   | 1,983.8  | -         | -       | -       | 3,499.4  |
| PENNSYLVANIA  | 42127 | WAYNE          | 37.3        | 296.6    | 679.2    | 19.7          | 154.8   | 351.0    | -         | -       | -       | 451.5    |
| PENNSYLVANIA  | 42131 | WYOMING        | 98.0        | 2,825.3  | 6,529.9  | 54.3          | 1,480.7 | 3,551.1  | -         | -       | -       | 4,306.0  |
| PENNSYLVANIA  | 42133 | YORK           | 1,882.6     | 23,867.0 | 61,414.8 | 673.4         | 8,192.3 | 20,754.8 | -         | -       | -       | 32,059.3 |
| VIRGINIA  | 51001 | ACCOMACK       | 1,141.3     | 7,314.3  | 15,310.0 | 330.2         | 3,261.3 | 6,675.0  | 244.7     | 1,427.6 | 2,983.1 | 12,003.3 |
| VIRGINIA  | 51003 | ALBEMARLE      | 564.0       | 8,083.4  | 19,945.2 | 206.6         | 2,466.8 | 5,978.5  | -         | -       | -       | 10,550.2 |
| VIRGINIA  | 51005 | ALLEGHANY      | 348.0       | 4,100.9  | 10,744.8 | 66.5          | 1,934.6 | 4,983.5  | -         | -       | -       | 6,035.5  |
| VIRGINIA  | 51007 | AMELIA         | 468.5       | 4,502.4  | 9,698.8  | 137.8         | 1,297.9 | 2,752.7  | -         | -       | -       | 5,800.3  |
| VIRGINIA  | 51009 | AMHERST        | 421.5       | 6,361.0  | 14,121.3 | 05.6          | 1,678.8 | 3,852.4  | -         | -       | -       | 8,039.8  |
| VIRGINIA  | 51011 | APPOMATTOX     | -           | 1,476.0  | 3,930.4  | -             | 447.3   | 1,187.8  | -         | -       | -       | 1,923.3  |
| VIRGINIA  | 51013 | ARLINGTON      | -           | -        | -        | -             | -       | -        | -         | -       | -       | -        |
| VIRGINIA  | 51015 | AUGUSTA        | 379.1       | 10,620.8 | 26,051.4 | 66.8          | 4,376.7 | 10,576.8 | -         | -       | -       | 14,997.5 |
| VIRGINIA  | 51017 | BATH           | 1,023.6     | 3,264.1  | 6,280.3  | 486.1         | 1,529.3 | 2,915.0  | -         | -       | -       | 4,793.4  |
| VIRGINIA  | 51019 | BEDFORD        | 187.8       | 1,799.2  | 4,267.6  | 45.9          | 482.8   | 1,145.9  | -         | -       | -       | 2,282.0  |
| VIRGINIA  | 51023 | ROTTENBURG     | 265.1       | 3,707.2  | 9,696.7  | 120.8         | 1,539.7 | 3,943.7  | -         | -       | -       | 5,247.0  |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

|          |       |                | e. POUNDS OF NITROGEN LOADED BY RURAL NONFARM POPULATIONS USING OTHER MEANS OF DISPOSAL TO |          |          |               |         |         |           |         |         | TOTAL 4c |
|----------|-------|----------------|--|----------|----------|---------------|---------|---------|-----------|---------|---------|----------|
|          |       |                | GROUNDWATER  |          |          | SURFACE WATER |         |         | BAY WATER |         |         |          |
| STATE    | FIPS  | COUNTY         | MIN  | MEAN     | MAX      | MIN           | MEAN    | MAX     | MIN       | MEAN    | MAX     |          |
| VIRGINIA | 51029 | BUCKINGHAM     | 778.1  | 7,470.5  | 16,049.8 | 212.6         | 2,137.6 | 4,564.9 | -         | -       | -       | 9,608.1  |
| VIRGINIA | 51031 | CAMPBELL       | 1.1  | 146.9    | 2,382.6  | 0.3           | 247.8   | 690.4   | -         | -       | -       | 1,694.7  |
| VIRGINIA | 51033 | CAROLINE       | 1,153.2  | 8,138.1  | 19,848.9 | 406.3         | 2,879.2 | 6,316.3 | -         | -       | -       | 11,750.0 |
| VIRGINIA | 51036 | CHARLES CITY   | 838.2  | 3,585.5  | 8,639.6  | 351.1         | 1,608.9 | 3,430.5 | -         | 31.7    | 109.1   | 6,149.0  |
| VIRGINIA | 51037 | CHARLOTTE      | 00   | 0.5      | 1.1      | 0.0           | 0.1     | 0.1     | 145.4     | 554.6   | 1,113.5 | 0.6      |
| VIRGINIA | 51041 | CHESTERFIELD   | -  | 1,395.6  | 6,368.1  | -             | 470.5   | 1,847.1 | -         | -       | -       | 2,138.8  |
| VIRGINIA | 51043 | CLARKE         | -  | 2,622.9  | 6,683.7  | -             | 1,035.9 | 2,590.5 | -         | 71.7    | 275.3   | 3,698.7  |
| VIRGINIA | 51045 | CRAIG          | 182.8  | 1,366.7  | 2,983.9  | 84.3          | 625.7   | 1,351.9 | -         | -       | -       | 1,992.4  |
| VIRGINIA | 51047 | CULPEPER       | 2,405.4  | 10,618.0 | 21,277.0 | 840.7         | 3,602.2 | 7,101.9 | -         | -       | -       | 14,240.2 |
| VIRGINIA | 51049 | CUMBERLAND     | 1,585.0  | 6,168.3  | 11,845.0 | 412.6         | 1,598.4 | 3,032.2 | -         | -       | -       | 7,756.7  |
| VIRGINIA | 51053 | DINWIDDIE      | 88.9   | 875.6    | 1,918.0  | 21.6          | 194.5   | 417.1   | -         | -       | -       | 1,070.1  |
| VIRGINIA | 51057 | ESSEX          | 376.3  | 3,399.7  | 7,567.8  | 133.5         | 1,226.7 | 2,733.8 | -         | -       | -       | 4,815.3  |
| VIRGINIA | 51059 | FAIRFAX        | -  | 721.8    | 3,446.1  | -             | 240.5   | 1,144.0 | 16.0      | 258.9   | 716.7   | 1,016.2  |
| VIRGINIA | 51061 | FAUQUIER       | 842.3  | 7,710.0  | 17,403.2 | 298.3         | 2,607.3 | 5,756.3 | -         | 739     | 309.1   | 10,317.3 |
| VIRGINIA | 51065 | FLUVANNA       | 367.4  | 4,998.3  | 11,295.1 | 103.0         | 1,256.3 | 2,780.3 | -         | -       | -       | 6,234.6  |
| VIRGINIA | 51069 | FREDERICK      | 463.9  | 9,923.5  | 25,813.3 | 191.4         | 3,648.2 | 9,340.8 | -         | -       | -       | 13,511.7 |
| VIRGINIA | 51071 | GILES          | -  | 100.6    | 264.9    | -             | 44.8    | 116.7   | -         | -       | -       | 145.5    |
| VIRGINIA | 51073 | GLOUCESTER     | 1,004.9  | 6,138.1  | 13,391.1 | 354.2         | 2,356.2 | 5,203.0 | 252.2     | 1,552.2 | 3,608.1 | 10,046.6 |
| VIRGINIA | 51075 | GOOCHLAND      | 640.1  | 5,904.4  | 14,826.8 | 173.1         | 1,672.1 | 4,148.1 | -         | -       | -       | 7,642.5  |
| VIRGINIA | 51079 | GREENE         | 664.0  | 3,225.0  | 6,983.6  | 315.1         | 1,325.9 | 2,748.9 | -         | -       | -       | 4,551.0  |
| VIRGINIA | 51085 | HANOVER        | 1,482.1  | 11,875.7 | 28,006.8 | 515.4         | 3,848.0 | 8,949.6 | -         | -       | -       | 15,733.7 |
| VIRGINIA | 51087 | HENRICO        | -  | 2,360.7  | 7,943.9  | -             | 770.7   | 2,563.1 | -         | -       | -       | 3,230.3  |
| VIRGINIA | 51091 | IRIGHLAND      | 259.0  | 1,813.3  | 3,715.8  | 128.3         | 861.4   | 1,741.0 | -         | 98.9    | 364.2   | 2,614.7  |
| VIRGINIA | 51093 | ISLE OF WIGHT  | 37.4   | 1,895.9  | 4,807.9  | 13.7          | 757.4   | 1,899.2 | -         | -       | -       | 3,030.6  |
| VIRGINIA | 51095 | JAMES CITY     | 51.4   | 1,557.9  | 4,258.5  | 17.2          | 569.8   | 1,560.7 | -         | 377.1   | 887.2   | 2,226.9  |
| VIRGINIA | 51097 | KING AND QUEEN | 570.9  | 2,320.2  | 4,611.1  | 193.7         | 800.1   | 1,580.8 | -         | 99.2    | 300.2   | 3,228.5  |
| VIRGINIA | 51099 | KING GEORGE    | 39.5   | 2,309.1  | 6,401.7  | 13.1          | 789.4   | 2,174.0 | 11.7      | 104.2   | 222.8   | 3,351.1  |
| VIRGINIA | 51101 | KING WILLIAM   | 292.4  | 3,181.2  | 6,979.6  | 99.6          | 1,096.9 | 2,384.0 | 4.1       | 256.6   | 674.5   | 4,456.0  |
| VIRGINIA | 51103 | LANCASTER      | 161.1  | 2,724.0  | 6,964.2  | 54.6          | 1,015.1 | 2,610.4 | 17.8      | 177.5   | 394.4   | 4,959.0  |
| VIRGINIA | 51107 | LOUDOUN        | 320.2  | 5,614.7  | 14,432.8 | 126.1         | 1,706.6 | 4,237.2 | 12.7      | 1,217.5 | 3,560.7 | 7,321.3  |
| VIRGINIA | 51109 | LOUISA         | 1,647.5  | 11,231.1 | 23,600.5 | 366.5         | 2,530.4 | 5,270.3 | -         | -       | -       | 13,761.6 |
| VIRGINIA | 51111 | LUNENBERG      | -  | 1.0      | 2.2      | -             | 0.3     | 0.6     | -         | -       | -       | 13       |
| VIRGINIA | 51113 | MADISON        | 2,655.0  | 6,925.1  | 12,417.7 | 942.9         | 2,361.7 | 4,146.9 | -         | -       | -       | 9,290.8  |
| VIRGINIA | 51115 | MATHEWS        | 230.4  | 1,605.7  | 3,357.5  | 124.5         | 841.0   | 1,735.3 | -         | -       | -       | 3,606.5  |
|          |       |                |  |          |          |               |         |         | 158.4     | 1,155.8 | 2,603.8 | 3,606.5  |

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
 COUNTY SUMMARIES  
 NCRI-CHESAPEAKE, Inc.

|          |       |                  | e. POUNDS OF NITROGEN LOADED BY RURAL NONFARM POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |          |          |               |         |          |           |         |         | TOTAL 4  |
|----------|-------|------------------|---|----------|----------|---------------|---------|----------|-----------|---------|---------|----------|
|          |       |                  | GROUNDWATER   |          |          | SURFACE WATER |         |          | BAY WATER |         |         |          |
| STATE    | FIPS  | COUNTY           | MIN   | MEAN     | MAX      | MIN           | MEAN    | MAX      | MIN       | MEAN    | MAX     |          |
| VIRGINIA | 51119 | MIDDLESEX        | -   | 1,598.2  | 4,457.2  | -             | 597.2   | 1,643.0  | -         | 637.7   | 1,949.9 | 2,833.1  |
| VIRGINIA | 51121 | MONTGOMERY       | 39.4  | 260.7    | 562.6    | 19.0          | 123.4   | 263.4    | -         | -       | -       | 384.7    |
| VIRGINIA | 51122 | NELSON           | 3,928.8   | 12,799.6 | 24,092.8 | 1,181.8       | 3,803.3 | 7,110.9  | -         | -       | -       | 16,602.5 |
| VIRGINIA | 51127 | NEW KENT         | 21.0  | 1,562.6  | 4,416.5  | 8.6           | 625.5   | 1,745.4  | -         | 161.3   | 508.7   | 2,349.3  |
| VIRGINIA | 51131 | NORTHAMPTON      | 438.7   | 3,602.5  | 7,608.3  | 161.9         | 1,281.6 | 2,666.4  | 51.9      | 692.6   | 1,544.0 | 5,576.7  |
| VIRGINIA | 51133 | NORTHUMBERLAND   | 282.2   | 3,006.1  | 7,000.9  | 94.9          | 1,083.6 | 2,521.0  | 9.4       | 1,437.5 | 3,798.8 | 5,527.2  |
| VIRGINIA | 51135 | NOTTOWAY         | 124.4   | 2,555.0  | 5,774.6  | 33.5          | 684.6   | 1,514.8  | -         | -       | -       | 3,239.6  |
| VIRGINIA | 51137 | ORANGE           | 847.9   | 5,665.9  | 12,205.5 | 228.2         | 1,596.6 | 3,439.3  | -         | -       | -       | 7,262.5  |
| VIRGINIA | 51139 | PAGE             | 48.3  | 4,356.2  | 11,649.9 | 24.3          | 1,965.5 | 5,175.4  | -         | -       | -       | 6,321.7  |
| VIRGINIA | 51145 | POWhatan         | 110.9   | 3,205.6  | 8,939.9  | 31.4          | 966.6   | 2,692.3  | -         | -       | -       | 4,172.2  |
| VIRGINIA | 51147 | PRINCE EDWARD    | 779.1   | 4,592.7  | 10,068.8 | 264.8         | 1,559.2 | 3,389.3  | -         | -       | -       | 6,152.0  |
| VIRGINIA | 51149 | PRINCE GEORGE    | 20.5  | 1,098.7  | 2,806.3  | 8.2           | 453.3   | 1,144.6  | 1.0       | 49.8    | 131.7   | 1,601.8  |
| VIRGINIA | 51153 | PRINCE WILLIAM   | 46.3  | 4,971.1  | 13,887.7 | 16.5          | 1,561.1 | 4,289.2  | -         | 82.5    | 312.8   | 6,614.7  |
| VIRGINIA | 51157 | RAPPAHANNOCK     | 374.9   | 3,809.9  | 8,215.5  | 104.8         | 1,099.1 | 2,369.5  | -         | -       | -       | 4,909.0  |
| VIRGINIA | 51159 | RICHMOND         | 415.1   | 3,233.1  | 6,742.7  | 160.2         | 1,202.9 | 2,475.4  | -         | -       | -       | 4,796.7  |
| VIRGINIA | 51161 | ROANOKE          | -   | 46.8     | 182.7    | -             | 18.9    | 73.1     | 56.7      | 360.7   | 739.2   | 65.7     |
| VIRGINIA | 51163 | ROCKBRIDGE       | 1,003.4   | 8,224.4  | 18,390.4 | 386.8         | 3,207.3 | 7,102.7  | -         | -       | -       | 11,431.7 |
| VIRGINIA | 51165 | ROCKINGHAM       | 749.0   | 13,582.0 | 32,295.9 | 312.0         | 5,538.8 | 12,976.1 | -         | -       | -       | 19,120.8 |
| VIRGINIA | 51171 | SHENANDOAH       | 1,556.0   | 10,505.2 | 23,444.8 | 618.6         | 4,067.7 | 8,967.6  | -         | -       | -       | 14,572.9 |
| VIRGINIA | 51177 | SPOTSYLVANIA     | 531.2   | 7,468.1  | 18,292.9 | 165.5         | 2,031.9 | 4,900.9  | -         | 132.3   | 322.8   | 9,632.3  |
| VIRGINIA | 51179 | STAFFORD         | 373.9   | 5,274.4  | 14,173.7 | 108.6         | 1,599.6 | 4,314.6  | 18.3      | 259.9   | 710.5   | 7,133.9  |
| VIRGINIA | 51181 | SURRY            | 159.0   | 1,232.3  | 2,606.6  | 60.2          | 470.3   | 983.4    | 6.7       | 93.0    | 207.5   | 1,795.6  |
| VIRGINIA | 51187 | WARREN           | 176.7   | 3,593.2  | 9,364.2  | 72.5          | 1,504.4 | 3,901.8  | -         | -       | -       | 5,097.6  |
| VIRGINIA | 51193 | WESTMORELAND     | 876.5   | 5,120.3  | 11,099.8 | 366.9         | 2,049.4 | 4,431.8  | 276.8     | 1,140.1 | 2,584.1 | 8,309.9  |
| VIRGINIA | 51199 | YORK             | -   | 393.4    | 1,134.7  | -             | 213.0   | 604.4    | -         | 165.9   | 546.7   | 772.2    |
| VIRGINIA | 51510 | ALEXANDRIA       | -   | -        | -        | -             | -       | -        | -         | -       | -       | -        |
| VIRGINIA | 51530 | BUENA VISTA      | -   | -        | -        | -             | -       | -        | -         | -       | -       | -        |
| VIRGINIA | 51540 | CHARLOTTESVILLE  | -   | -        | -        | -             | -       | -        | -         | -       | -       | -        |
| VIRGINIA | 51550 | CHESAPEAKE CITY  | -   | -        | -        | -             | -       | -        | -         | -       | -       | -        |
| VIRGINIA | 51560 | CLIFTON FORGE    | -   | 4.0      | 15.9     | -             | 2.2     | 8.6      | -         | -       | -       | 6.2      |
| VIRGINIA | 51570 | COLONIAL HEIGHTS | -   | -        | -        | -             | -       | -        | -         | -       | -       | -        |
| VIRGINIA | 51580 | COVINGTON        | -   | -        | -        | -             | -       | -        | -         | -       | -       | -        |
| VIRGINIA | 51600 | FAIRFAX          | -   | -        | -        | -             | -       | -        | -         | -       | -       | -        |
| VIRGINIA | 51610 | FALLS CHURCH     | -   | -        | -        | -             | -       | -        | -         | -       | -       | -        |

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Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc.         |      |        |             |           |             |               |           |           |           |          |          |                     |
|--|------|--------|-------------|-----------|-------------|---------------|-----------|-----------|-----------|----------|----------|---------------------|
| e. POUNDS OF NITROGEN LOADED BY RURAL NONFARM POPULATIONS USING OTHER MEANS OF DISPOSAL TO |      |        |             |           |             |               |           |           |           |          |          |                     |
|  |      |        | GROUNDWATER |           |             | SURFACE WATER |           |           | BAY WATER |          |          | TOTAL <sup>4a</sup> |
| STATE  | FIPS | COUNTY | MIN         | MEAN      | MAX         | MIN           | MEAN      | MAX       | MIN       | MEAN     | MAX      |                     |
| Grand Total  |      |        | 108,217.6   | 781,243.0 | 1,854,532.9 | 42,716.0      | 292,400.2 | 680,161.2 | 2,002.3   | 24,214.8 | 63,767.4 | 1,101,928.1         |

**NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES**

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

|               |      |                     | e. POUNDS OF NITROGEN LOADED BY RURAL NONFARM POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |          |          |               |         |         |           |      |       | TOTAL 4  |
|---------------|------|---------------------|---|----------|----------|---------------|---------|---------|-----------|------|-------|----------|
|               |      |                     | GROUNDWATER   |          |          | SURFACE WATER |         |         | BAY WATER |      |       |          |
| STATE         | FIPS | COUNTY              | MIN   | MEAN     | MAX      | MIN           | MEAN    | MAX     | MIN       | MEAN | MAX   |          |
| VIRGINIA      | 5163 | FREDERICKSBURG      | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5165 | HAMPTON CITY        | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5166 | HARRISONBURG        | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5167 | HOPEVELL            | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5167 | LEXINGTON           | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5168 | LYNCHBURG           | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5168 | MANASSES CITY       | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5168 | MANASSES PARK CITY  | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5170 | NEWPORT NEWS CITY   | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5171 | NORFOLK CITY        | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5173 | PETERSBURG          | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5173 | POQUOSON            | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5174 | PORTSMOUTH CITY     | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5176 | RICHMOND CITY       | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5179 | STAUNTON            | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5180 | SUFFOLK CITY        | 5.9   | 1,075.5  | 2,554.9  | 3.1           | 459.8   | 1,082.4 | -         | 40.2 | 130.5 | 1,575.1  |
| VIRGINIA      | 5181 | VIRGINIA BEACH CITY | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5182 | WAYNESBORO          | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5183 | WILLIAMSBURG        | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| VIRGINIA      | 5184 | WINCHESTER          | -   | -        | -        | -             | -       | -       | -         | -    | -     | -        |
| WEST VIRGINIA | 5403 | BERKELEY            | 1,063.0   | 11,361.4 | 26,591.7 | 398.5         | 3,959.5 | 9,124.8 | -         | -    | -     | 15,320.1 |
| WEST VIRGINIA | 5403 | GRANT               | 470.6   | 3,596.9  | 7,903.6  | 213.4         | 1,574.3 | 3,409.4 | -         | -    | -     | 5,170.3  |
| WEST VIRGINIA | 5405 | GREENBRIAR          | 0.3   | 1.5      | 4.1      | 0.2           | 0.8     | 2.1     | -         | -    | -     | 2.4      |
| WEST VIRGINIA | 5407 | HAMPSHIRE           | 1,697.1   | 9,037.4  | 14,750.2 | 815.1         | 4,293.7 | 8,807.4 | -         | -    | -     | 13,331.1 |
| WEST VIRGINIA | 5401 | HARDY               | 1,255.1   | 6,581.4  | 13,124.7 | 595.1         | 3,108.6 | 6,139.2 | -         | -    | -     | 9,690.0  |
| WEST VIRGINIA | 5407 | JEFFERSON           | 85.1  | 3,032.8  | 4,075.1  | 24.0          | 989.6   | 2,644.8 | -         | -    | -     | 4,022.4  |
| WEST VIRGINIA | 5407 | MINERAL             | -   | 2,071.1  | 6,350.6  | -             | 896.1   | 2,724.7 | -         | -    | -     | 2,967.2  |
| WEST VIRGINIA | 5406 | MONROE              | 84.8  | 616.5    | 1,309.8  | 38.6          | 276.5   | 581.0   | -         | -    | -     | 893.0    |
| WEST VIRGINIA | 5405 | MORGAN              | 240.9   | 2,363.3  | 5,804.1  | 110.8         | 1,076.7 | 2,598.7 | -         | -    | -     | 3,440.0  |
| WEST VIRGINIA | 5401 | PENDLETON           | 2,834.8   | 6,992.7  | 12,206.7 | 1,308.3       | 3,177.8 | 5,484.5 | -         | -    | -     | 10,170.4 |
| WEST VIRGINIA | 5405 | POCAHONTAS          | 0.1   | 1.4      | 3.3      | 0.0           | 0.7     | 1.7     | -         | -    | -     | 2.1      |
| WEST VIRGINIA | 5407 | PRESTON             | -   | 17.8     | 43.2     | -             | 6.1     | 14.5    | -         | -    | -     | 23.9     |
| WEST VIRGINIA | 5403 | RANDOLPH            | -   | 0.9      | 2.4      | -             | 0.5     | 1.2     | -         | -    | -     | 1.4      |
| WEST VIRGINIA | 5403 | TUCKER              | -   | 12.1     | 33.0     | -             | 4.4     | 11.7    | -         | -    | -     | 16.5     |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

| STATE                | FIPS  | COUNTY          | LBS. POUNDS OF NITROGEN LOADED BY FARM POPULATIONS USING OTHER MEANS OF WASTE DISPOSAL TO: |         |         |               |         |         |           |       |         | TOTAL 4f | TOTAL NITROGEN (lbs) |
|----------------------|-------|-----------------|--|---------|---------|---------------|---------|---------|-----------|-------|---------|----------|----------------------|
|                      |       |                 | GROUND WATER   |         |         | SURFACE WATER |         |         | BAY WATER |       |         |          |                      |
|                      |       |                 | MIN  | MEAN    | MAX     | MIN           | MEAN    | MAX     | MIN       | MEAN  | MAX     |          |                      |
| DELAWARE             | 10001 | KENT            | -  | 242.6   | 1,307.4 | -             | 85.4    | 453.2   | -         | -     | -       | 328.0    | 130,032.7            |
| DELAWARE             | 10003 | NEW CASTLE      | -  | 26.6    | 137.0   | -             | 9.4     | 47.2    | -         | -     | -       | 36.0     | 34,429.1             |
| DELAWARE             | 10005 | SUSSEX          | -  | 1,113.8 | 4,204.6 | -             | 349.0   | 1,298.1 | -         | 10.1  | 61.1    | 1,472.9  | 299,260.1            |
| DISTRICT OF COLUMBIA | 11001 | WASHINGTON      | -  | -       | -       | -             | -       | -       | -         | -     | -       | -        | 48,525.8             |
| MARYLAND             | 24001 | ALLEGANY        | -  | 156.2   | 910.8   | -             | 69.0    | 397.4   | -         | -     | -       | 225.2    | 114,283.7            |
| MARYLAND             | 24003 | ANNE ARUNDEL    | -  | 267.3   | 1,386.1 | -             | 91.1    | 462.6   | -         | 13.2  | 94.8    | 371.6    | 980,354.8            |
| MARYLAND             | 24005 | BALTIMORE       | -  | -       | -       | -             | -       | -       | -         | -     | -       | -        | 786,146.3            |
| MARYLAND             | 24009 | CALVERT         | -  | 1,138.8 | 3,966.8 | -             | 414.2   | 1,430.8 | -         | 141.5 | 570.9   | 1,694.5  | 405,148.4            |
| MARYLAND             | 24011 | CAROLINE        | -  | 143.7   | 1,271.9 | -             | 46.1    | 403.9   | -         | 4.9   | 53.7    | 194.7    | 163,112.1            |
| MARYLAND             | 24013 | CARROLL         | -  | -       | -       | -             | -       | -       | -         | -     | -       | -        | 700,080.3            |
| MARYLAND             | 24015 | CECIL           | -  | 48.3    | 868.4   | -             | 15.2    | 273.0   | -         | 4.1   | 57.6    | 67.7     | 368,728.8            |
| MARYLAND             | 24017 | CHARLES         | -  | 665.4   | 3,142.8 | -             | 244.1   | 1,136.2 | -         | 76.4  | 350.8   | 985.9    | 377,219.0            |
| MARYLAND             | 24019 | DORCHESTER      | -  | 440.7   | 2,315.4 | -             | 144.2   | 761.7   | -         | 48.5  | 295.4   | 633.4    | 127,079.0            |
| MARYLAND             | 24021 | FREDERICK       | -  | -       | -       | -             | -       | -       | -         | -     | -       | -        | 630,918.0            |
| MARYLAND             | 24023 | GARRETT         | -  | 179.9   | 836.9   | -             | 65.4    | 298.6   | -         | -     | -       | 245.3    | 38,078.7             |
| MARYLAND             | 24025 | HARFORD         | -  | -       | -       | -             | -       | -       | -         | -     | -       | -        | 639,732.3            |
| MARYLAND             | 24027 | HOWARD          | -  | -       | -       | -             | -       | -       | -         | -     | -       | -        | 310,347.6            |
| MARYLAND             | 24029 | KENT            | -  | 109.4   | 843.3   | -             | 32.7    | 253.2   | -         | 15.9  | 162.4   | 158.0    | 83,328.7             |
| MARYLAND             | 24031 | MONTGOMERY      | -  | -       | -       | -             | -       | -       | -         | -     | -       | -        | 450,848.6            |
| MARYLAND             | 24033 | PRINCE GEORGE'S | -  | -       | -       | -             | -       | -       | -         | -     | -       | -        | 251,969.0            |
| MARYLAND             | 24035 | QUEEN ANNE'S    | -  | 48.1    | 616.8   | -             | 14.3    | 183.7   | -         | 4.4   | 97.1    | 66.8     | 216,469.1            |
| MARYLAND             | 24037 | SAINT MARY'S    | 69.5   | 3,270.4 | 8,991.4 | 25.0          | 1,184.0 | 3,202.8 | -         | 307.8 | 1,251.6 | 4,762.2  | 464,347.0            |
| MARYLAND             | 24039 | SOMERSET        | -  | 244.3   | 1,317.7 | -             | 88.1    | 476.4   | -         | 23.4  | 176.2   | 355.8    | 107,957.5            |
| MARYLAND             | 24041 | TALBOT          | -  | 28.1    | 426.3   | -             | 9.0     | 135.2   | -         | 12.5  | 245.1   | 49.6     | 147,944.5            |
| MARYLAND             | 24043 | WASHINGTON      | -  | 1,016.1 | 4,506.8 | -             | 323.6   | 1,453.3 | -         | -     | -       | 1,339.7  | 429,874.0            |
| MARYLAND             | 24045 | WICOMICO        | -  | 404.3   | 2,047.1 | -             | 138.3   | 694.0   | -         | 23.5  | 115.6   | 566.2    | 346,208.3            |
| MARYLAND             | 24047 | WORCESTER       | -  | 160.6   | 928.9   | -             | 66.2    | 385.2   | -         | 0.7   | 7.1     | 227.5    | 63,913.5             |
| MARYLAND             | 24510 | BALTIMORE CITY  | -  | -       | -       | -             | -       | -       | -         | -     | -       | -        | 139,914.2            |
| NEW YORK             | 36003 | ALLEGANY        | -  | 20.7    | 137.4   | -             | 9.9     | 63.8    | -         | -     | -       | 30.6     | 22,816.5             |
| NEW YORK             | 36007 | BROOME          | -  | 818.8   | 3,157.7 | -             | 390.6   | 1,497.6 | -         | -     | -       | 1,209.5  | 576,596.3            |
| NEW YORK             | 36011 | CAYUGA          | -  | 0.0     | 0.0     | -             | -       | 0.0     | -         | -     | -       | 0.0      | 40.5                 |
| NEW YORK             | 36015 | CHEMUNG         | -  | 392.2   | 1,770.0 | -             | 184.4   | 827.5   | -         | -     | -       | 576.6    | 292,747.4            |
| NEW YORK             | 36017 | CHEMUNGO        | -  | 189.6   | 1,979.1 | -             | 88.5    | 916.0   | -         | -     | -       | 278.1    | 329,334.6            |

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

| STATE        | FIPS     | COUNTY      | POUNDS OF NITROGEN LOADED BY FARM POPULATIONS USING OTHER MEANS OF WASTE DISPOSAL TO: |         |         |               |         |         |          |      |     | TOTAL 4f | TOTAL NITROGEN (lbs) |
|--------------|----------|-------------|---|---------|---------|---------------|---------|---------|----------|------|-----|----------|----------------------|
|              |          |             | GROUND WATER  |         |         | SURFACE WATER |         |         | BAYWATER |      |     |          |                      |
|              |          |             | MIN   | MEAN    | MAX     | MIN           | MEAN    | MAX     | MIN      | MEAN | MAX |          |                      |
| NEW YORK     | 36023    | CORTLAND    | -   | 348.3   | 1,869.8 | -             | 165.8   | 872.5   | -        | -    | -   | 514.1    | 178,162.2            |
| NEW YORK     | 36025    | DELAWARE    | -   | 152.0   | 900.0   | -             | 73.0    | 428.0   | -        | -    | -   | 225.0    | 82,313.5             |
| NEW YORK     | 36043    | HERKIMER    | -   | 10.7    | 143.8   | -             | 4.4     | 57.5    | -        | -    | -   | 15.1     | 37,090.2             |
| NEW YORK     | 36051    | LIVINGSTON  | -   | 0.8     | 17.7    | -             | 0.4     | 8.2     | -        | -    | -   | 1.2      | 3,254.5              |
| NEW YORK     | 36053    | MADISON     | -   | 85.0    | 757.1   | -             | 39.2    | 344.9   | -        | -    | -   | 124.1    | 115,428.7            |
| NEW YORK     | 36065    | ONEIDA EAST | -   | 11.4    | 117.3   | -             | 5.3     | 51.7    | -        | -    | -   | 16.7     | 20,964.3             |
| NEW YORK     | 36067    | ONONDAGA    | -   | 40.0    | 235.5   | -             | 16.3    | 94.7    | -        | -    | -   | 56.3     | 19,160.1             |
| NEW YORK     | 36069    | ONTARIO     | -   | -       | -       | -             | -       | -       | -        | -    | -   | -        | 1,013.5              |
| NEW YORK     | 36077    | OTSEGO      | -   | 365.7   | 2,569.8 | -             | 159.7   | 1,106.5 | -        | -    | -   | 525.4    | 347,424.6            |
| NEW YORK     | 36095    | SCHOHARIE   | -   | 19.0    | 168.8   | -             | 8.4     | 73.6    | -        | -    | -   | 27.4     | 9,358.1              |
| NEW YORK     | 36097    | SCHUYLER    | -   | 267.7   | 1,032.4 | -             | 123.3   | 469.5   | -        | -    | -   | 390.9    | 36,357.5             |
| NEW YORK     | 36101    | STEBEN      | -   | 2,094.4 | 8,255.5 | -             | 1,013.5 | 3,904.3 | -        | -    | -   | 3,107.8  | 425,247.0            |
| NEW YORK     | 36107    | TIOGA       | -   | 339.0   | 1,986.3 | -             | 157.8   | 910.0   | -        | -    | -   | 496.8    | 308,120.9            |
| NEW YORK     | 36109    | TOMPKINS    | -   | 46.3    | 257.9   | -             | 21.2    | 117.2   | -        | -    | -   | 67.5     | 45,452.7             |
| NEW YORK     | 36113    | YATES       | -   | 9.4     | 46.4    | -             | 4.7     | 22.9    | -        | -    | -   | 14.1     | 2,251.5              |
| PENNSYLVANIA | 42001    | ADAMS       | -   | 460.9   | 2,501.8 | -             | 141.1   | 757.9   | -        | -    | -   | 602.0    | 368,152.1            |
| PENNSYLVANIA | 42009    | BEDFORD     | -   | 304.2   | 1,680.4 | -             | 123.4   | 663.3   | -        | -    | -   | 427.6    | 329,954.9            |
| PENNSYLVANIA | 42011    | BERKS       | -   | 219.8   | 804.4   | -             | 84.0    | 300.9   | -        | -    | -   | 303.8    | 97,515.6             |
| PENNSYLVANIA | 42013.00 | BLAIR       | -   | 477.6   | 1,395.5 | -             | 178.4   | 513.3   | -        | -    | -   | 656.0    | 328,693.1            |
| PENNSYLVANIA | 42015    | BRADFORD    | -   | 735.4   | 2,772.0 | -             | 365.5   | 1,361.2 | -        | -    | -   | 1,100.8  | 375,113.5            |
| PENNSYLVANIA | 42021    | CAMBRIA     | -   | 99.5    | 604.0   | -             | 38.9    | 233.7   | -        | -    | -   | 138.3    | 138,753.1            |
| PENNSYLVANIA | 42023    | CAMERON     | -   | -       | -       | -             | -       | -       | -        | -    | -   | -        | 25,902.7             |
| PENNSYLVANIA | 42025    | CARBON      | -   | 0.0     | 0.0     | -             | 0.0     | 0.0     | -        | -    | -   | 0.0      | 11.0                 |
| PENNSYLVANIA | 42027    | CENTRE      | -   | 684.6   | 2,645.8 | -             | 259.7   | 977.7   | -        | -    | -   | 944.3    | 327,499.1            |
| PENNSYLVANIA | 42029    | CHESTER     | -   | 213.5   | 1,029.8 | -             | 72.2    | 344.6   | -        | -    | -   | 285.7    | 180,216.0            |
| PENNSYLVANIA | 42033    | CLEARFIELD  | -   | -       | -       | -             | -       | -       | -        | -    | -   | -        | 337,803.2            |
| PENNSYLVANIA | 42035    | CLINTON     | -   | 446.7   | 1,456.2 | -             | 181.3   | 592.4   | -        | -    | -   | 628.0    | 120,818.5            |
| PENNSYLVANIA | 42037    | COLUMBIA    | -   | 216.3   | 1,170.8 | -             | 80.8    | 436.8   | -        | -    | -   | 297.0    | 315,775.3            |
| PENNSYLVANIA | 42041    | CUMBERLAND  | -   | 141.2   | 1,339.1 | -             | 49.9    | 464.4   | -        | -    | -   | 191.1    | 482,060.5            |
| PENNSYLVANIA | 42043    | DAUPHIN     | -   | -       | -       | -             | -       | -       | -        | -    | -   | -        | 461,843.1            |
| PENNSYLVANIA | 42047    | ELK         | -   | -       | -       | -             | -       | -       | -        | -    | -   | -        | 43,301.1             |
| PENNSYLVANIA | 42055    | FRANKLIN    | -   | 967.9   | 4,042.8 | -             | 379.6   | 1,539.3 | -        | -    | -   | 1,347.5  | 430,125.9            |
| PENNSYLVANIA | 42057    | FULTON      | -   | 120.4   | 623.9   | -             | 50.0    | 254.6   | -        | -    | -   | 170.4    | 101,495.1            |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

| STATE        | FIPS     | COUNTY      | f. POUNDS OF NITROGEN LOADED BY FARM POPULATIONS USING OTHER MEANS OF WASTE DISPOSAL TO: |         |         |               |         |         |           |      |     | TOTAL 4f | TOTAL NITROGEN (lbs) |           |
|--------------|----------|-------------|--|---------|---------|---------------|---------|---------|-----------|------|-----|----------|----------------------|-----------|
|              |          |             | GROUND WATER   |         |         | SURFACE WATER |         |         | BAY WATER |      |     |          |                      |           |
|              |          |             | MIN  | MEAN    | MAX     | MIN           | MEAN    | MAX     | MIN       | MEAN | MAX |          |                      |           |
| NEW YORK     | 36023    | CORTLAND    | -  | 348.3   | 1,869.8 | -             | 165.8   | 872.5   | -         | -    | -   | -        | -                    | -         |
| NEW YORK     | 36025    | DELAWARE    | -  | 152.0   | 900.0   | -             | 73.0    | 428.0   | -         | -    | -   | 514.1    | -                    | 178,152.2 |
| NEW YORK     | 36043    | HERKIMER    | -  | 10.7    | 143.8   | -             | 4.4     | 57.5    | -         | -    | -   | 225.0    | -                    | 82,313.5  |
| NEW YORK     | 36051    | LIVINGSTON  | -  | 0.8     | 17.7    | -             | 0.4     | 8.2     | -         | -    | -   | 15.1     | -                    | 37,090.2  |
| NEW YORK     | 36053    | MADISON     | -  | 85.0    | 757.1   | -             | 39.2    | 344.9   | -         | -    | -   | 1.2      | -                    | 3,254.9   |
| NEW YORK     | 36065    | CNEIDA EAST | -  | 11.4    | 117.3   | -             | 5.3     | 51.7    | -         | -    | -   | 124.1    | -                    | 115,418.7 |
| NEW YORK     | 36067    | ONONDAGA    | -  | 40.0    | 235.5   | -             | 16.3    | 94.7    | -         | -    | -   | 16.7     | -                    | 20,964.3  |
| NEW YORK     | 36069    | ONTARIO     | -  | -       | -       | -             | -       | -       | -         | -    | -   | 56.3     | -                    | 19,160.1  |
| NEW YORK     | 36077    | OTSEGO      | -  | -       | -       | -             | -       | -       | -         | -    | -   | -        | -                    | -         |
| NEW YORK     | 36095    | SCHOHARIE   | -  | 365.7   | 2,569.8 | -             | 159.7   | 1,106.5 | -         | -    | -   | -        | -                    | 1,013.9   |
| NEW YORK     | 36097    | SCHUYLER    | -  | 19.0    | 168.4   | -             | 8.4     | 73.6    | -         | -    | -   | 525.4    | -                    | 347,424.0 |
| NEW YORK     | 36101    | STEUBEN     | -  | 267.7   | 1,032.4 | -             | 123.3   | 469.5   | -         | -    | -   | 27.4     | -                    | 9,358.1   |
| NEW YORK     | 36107    | TIOGA       | -  | 2,094.4 | 8,255.5 | -             | 1,013.5 | 3,904.3 | -         | -    | -   | 390.9    | -                    | 36,357.5  |
| NEW YORK     | 36109    | TOMPKINS    | -  | 339.0   | 1,986.3 | -             | 157.8   | 910.0   | -         | -    | -   | 3,107.8  | -                    | 425,247.0 |
| NEW YORK     | 36123    | YATES       | -  | 46.3    | 257.9   | -             | 21.2    | 117.2   | -         | -    | -   | 496.8    | -                    | 308,120.9 |
| PENNSYLVANIA | 42001    | ADAMS       | -  | 9.4     | 46.4    | -             | 4.7     | 22.9    | -         | -    | -   | 67.5     | -                    | 45,452.7  |
| PENNSYLVANIA | 42009    | BEDFORD     | -  | 460.9   | 2,501.8 | -             | 141.1   | 757.9   | -         | -    | -   | 14.1     | -                    | 2,251.3   |
| PENNSYLVANIA | 42011    | BERKS       | -  | 304.2   | 1,680.4 | -             | 123.4   | 663.3   | -         | -    | -   | 602.0    | -                    | 368,152.2 |
| PENNSYLVANIA | 42013.00 | BLAIR       | -  | 219.8   | 804.4   | -             | 84.0    | 300.9   | -         | -    | -   | 427.6    | -                    | 329,954.9 |
| PENNSYLVANIA | 42015    | BRADFORD    | -  | 477.6   | 1,395.5 | -             | 178.4   | 513.3   | -         | -    | -   | 303.8    | -                    | 97,515.6  |
| PENNSYLVANIA | 42021    | CAMBRIA     | -  | 735.4   | 2,772.0 | -             | 365.5   | 1,361.2 | -         | -    | -   | 656.0    | -                    | 328,693.1 |
| PENNSYLVANIA | 42023    | CAMERON     | -  | 99.5    | 604.0   | -             | 38.9    | 233.7   | -         | -    | -   | 1,100.8  | -                    | 375,113.5 |
| PENNSYLVANIA | 42025    | CARBON      | -  | -       | -       | -             | -       | -       | -         | -    | -   | 138.3    | -                    | 138,753.1 |
| PENNSYLVANIA | 42027    | CENTRE      | -  | 0.0     | 0.0     | -             | 0.0     | 0.0     | -         | -    | -   | -        | -                    | 25,902.7  |
| PENNSYLVANIA | 42029    | CHESTER     | -  | 684.6   | 2,645.8 | -             | 259.7   | 977.7   | -         | -    | -   | 0.0      | -                    | 110       |
| PENNSYLVANIA | 42033    | CLEARFIELD  | -  | 213.5   | 1,029.8 | -             | 72.2    | 344.6   | -         | -    | -   | 944.3    | -                    | 327,499.1 |
| PENNSYLVANIA | 42035    | CLINTON     | -  | -       | -       | -             | -       | -       | -         | -    | -   | 285.7    | -                    | 180,216.0 |
| PENNSYLVANIA | 42037    | COLUMBIA    | -  | 446.7   | 1,456.2 | -             | 181.3   | 592.4   | -         | -    | -   | -        | -                    | 337,803.2 |
| PENNSYLVANIA | 42041    | CUMBERLAND  | -  | 216.3   | 1,170.8 | -             | 80.8    | 436.8   | -         | -    | -   | 628.0    | -                    | 120,818.5 |
| PENNSYLVANIA | 42043    | DAUPHIN     | -  | 141.2   | 1,339.1 | -             | 49.9    | 464.4   | -         | -    | -   | 297.0    | -                    | 315,775.1 |
| PENNSYLVANIA | 42047    | ELK         | -  | -       | -       | -             | -       | -       | -         | -    | -   | 191.1    | -                    | 482,060.6 |
| PENNSYLVANIA | 42055    | FRANKLIN    | -  | -       | -       | -             | -       | -       | -         | -    | -   | -        | -                    | 461,843.1 |
| PENNSYLVANIA | 42057    | FULTON      | -  | 967.9   | 4,042.8 | -             | 379.6   | 1,539.3 | -         | -    | -   | -        | -                    | 43,301.3  |
|              |          |             | -  | 120.4   | 623.9   | -             | 50.0    | 254.6   | -         | -    | -   | 1,347.5  | -                    | 430,125.9 |
|              |          |             |  |         |         |               |         |         |           |      |     | 170.4    | -                    | 101,495.8 |

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

| STATE        | FIPS  | COUNTY         | POUNDS OF NITROGEN LOADED BY FARM POPULATIONS USING OTHER MEANS OF WASTE DISPOSAL TO: |         |          |               |         |         |           |       |       | TOTAL 4F | TOTAL NITROGEN (lbs) |
|--------------|-------|----------------|---|---------|----------|---------------|---------|---------|-----------|-------|-------|----------|----------------------|
|              |       |                | GROUND WATER  |         |          | SURFACE WATER |         |         | BAY WATER |       |       |          |                      |
|              |       |                | MIN   | MEAN    | MAX      | MIN           | MEAN    | MAX     | MIN       | MEAN  | MAX   |          |                      |
| PENNSYLVANIA | 42061 | HUNTINGDON     | -   | 246.2   | 1,329.2  | -             | 99.6    | 527.8   | -         | -     | -     | 345.8    | 232,613.4            |
| PENNSYLVANIA | 42063 | INDIANA        | -   | 117.7   | 377.9    | -             | 47.0    | 148.0   | -         | -     | -     | 164.7    | 28,324.1             |
| PENNSYLVANIA | 42065 | JEFFERSON      | -   | -       | -        | -             | -       | -       | -         | -     | -     | -        | 31.6                 |
| PENNSYLVANIA | 42067 | JUNIATA        | -   | 808.9   | 2,336.5  | -             | 329.0   | 939.8   | -         | -     | -     | -        | 140,632.4            |
| PENNSYLVANIA | 42069 | LACKAWANNA     | -   | -       | -        | -             | -       | -       | -         | -     | -     | 1,137.9  | 140,632.4            |
| PENNSYLVANIA | 42071 | LANCASTER      | 360.4   | 7,771.9 | 23,752.1 | 115.4         | 2,526.5 | 7,679.5 | -         | -     | -     | -        | 237,554.8            |
| PENNSYLVANIA | 42075 | LEBANON        | -   | 669.5   | 2,230.1  | -             | 241.0   | 806.2   | -         | -     | -     | 10,298.4 | 1,301,929.7          |
| PENNSYLVANIA | 42079 | LUZERNE        | -   | -       | -        | -             | -       | -       | -         | -     | -     | 910.5    | 314,223.4            |
| PENNSYLVANIA | 42081 | LYCOMING       | -   | 369.0   | 2,052.4  | -             | 151.7   | 829.6   | -         | -     | -     | -        | 556,897.7            |
| PENNSYLVANIA | 42083 | MCKEAN         | -   | -       | -        | -             | -       | -       | -         | -     | -     | 520.8    | 480,559.0            |
| PENNSYLVANIA | 42087 | MIFFLIN        | 164.2   | 2,408.7 | 6,297.1  | 62.5          | 892.8   | 2,357.8 | -         | -     | -     | -        | 1,716.4              |
| PENNSYLVANIA | 42091 | MONTGOMERY     | -   | 102.9   | 455.3    | -             | 37.9    | 166.1   | -         | -     | -     | 3,301.4  | 190,049.9            |
| PENNSYLVANIA | 42097 | NORTHUMBERLAND | -   | 225.0   | 1,301.9  | -             | 87.3    | 503.1   | -         | -     | -     | 140.9    | 75,884.2             |
| PENNSYLVANIA | 42099 | PERRY          | 0.0   | 313.4   | 1,331.7  | 0.0           | 130.9   | 540.1   | -         | -     | -     | 312.3    | 266,723.1            |
| PENNSYLVANIA | 42101 | POTTER         | -   | -       | -        | -             | -       | -       | -         | -     | -     | 444.2    | 265,771.9            |
| PENNSYLVANIA | 42107 | SCHUYLKILL     | -   | 230.6   | 1,448.5  | -             | 83.0    | 514.1   | -         | -     | -     | -        | 34,119.2             |
| PENNSYLVANIA | 42109 | SNYDER         | 755.9   | 2,949.0 | 5,965.7  | 308.1         | 1,200.3 | 2,407.8 | -         | -     | -     | 313.6    | 247,158.4            |
| PENNSYLVANIA | 42111 | SOMERSET       | -   | 72.4    | 299.4    | -             | 27.5    | 112.2   | -         | -     | -     | 4,149.3  | 179,309.8            |
| PENNSYLVANIA | 42113 | SULLIVAN       | -   | 29.1    | 212.1    | -             | 15.4    | 111.4   | -         | -     | -     | 99.9     | 23,368.3             |
| PENNSYLVANIA | 42115 | SUSQUEHANNA    | -   | 206.2   | 1,202.4  | -             | 104.9   | 606.8   | -         | -     | -     | 44.5     | 40,853.2             |
| PENNSYLVANIA | 42117 | TIOGA          | -   | 394.1   | 1,834.3  | -             | 191.5   | 883.8   | -         | -     | -     | 311.1    | 269,889.0            |
| PENNSYLVANIA | 42119 | UNION          | 21.6  | 764.2   | 2,287.0  | 8.4           | 277.8   | 810.6   | -         | -     | -     | 585.7    | 249,718.7            |
| PENNSYLVANIA | 42127 | WAYNE          | -   | 17.1    | 100.9    | -             | 9.0     | 52.4    | -         | -     | -     | 1,042.0  | 152,423.7            |
| PENNSYLVANIA | 42131 | WYOMING        | -   | 64.5    | 546.9    | -             | 34.2    | 284.0   | -         | -     | -     | 26.1     | 9,147.0              |
| PENNSYLVANIA | 42133 | YORK           | -   | 398.2   | 3,608.0  | -             | 142.5   | 1,261.6 | -         | -     | -     | 98.7     | 201,404.9            |
| VIRGINIA     | 51001 | ACCOMACK       | -   | 571.2   | 2,514.6  | -             | 262.6   | 1,116.1 | -         | 136.3 | 529.6 | 540.7    | 1,220,304.8          |
| VIRGINIA     | 51003 | ALBEMARLE      | -   | 464.8   | 2,749.1  | -             | 142.1   | 809.4   | -         | -     | -     | 970.2    | 119,654.3            |
| VIRGINIA     | 51005 | ALLEGHANY      | -   | -       | -        | -             | -       | -       | -         | -     | -     | 606.9    | 340,285.0            |
| VIRGINIA     | 51007 | AMELIA         | -   | 429.5   | 1,929.7  | -             | 124.4   | 546.2   | -         | -     | -     | -        | 72,237.0             |
| VIRGINIA     | 51009 | AMHERST        | -   | 420.6   | 1,978.0  | -             | 108.5   | 503.2   | -         | -     | -     | 553.9    | 71,604.2             |
| VIRGINIA     | 51011 | APPOMATTOX     | -   | 126.6   | 778.3    | -             | 38.1    | 234.9   | -         | -     | -     | 529.1    | 194,878.4            |
| VIRGINIA     | 51013 | ARLINGTON      | -   | -       | -        | -             | -       | -       | -         | -     | -     | 164.7    | 60,689.2             |
| VIRGINIA     | 51015 | AUGUSTA        | -   | 1,014.2 | 5,160.9  | -             | 410.9   | 2,068.9 | -         | -     | -     | -        | 12,212.5             |
|              |       |                |   |         |          |               |         |         |           |       |       | 1,425.1  | 355,386.5            |

Table 12

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

| CHESAPEAKE BAY PROGRAM SEPTIC PROJECT<br>COUNTY SUMMARIES<br>NCRI-CHESAPEAKE, Inc. |       |                | POUNDS OF NITROGEN LOADED BY FARM POPULATIONS USING OTHER MEANS OF WASTE DISPOSAL TO: |       |         |               |       |       |           |      |       |          | TOTAL NITROGEN (lbs) |
|--|-------|----------------|---|-------|---------|---------------|-------|-------|-----------|------|-------|----------|----------------------|
| STATE  | FIPS  | COUNTY         | GROUND WATER  |       |         | SURFACE WATER |       |       | BAY WATER |      |       | TOTAL 4C |                      |
|  |       |                | MIN   | MEAN  | MAX     | MIN           | MEAN  | MAX   | MIN       | MEAN | MAX   |          |                      |
| VIRGINIA   | 51017 | BATH           | -   | 241.3 | 857.9   | -             | 112.1 | 394.9 | -         | -    | -     | 353.4    | 27,939.1             |
| VIRGINIA   | 51019 | BEDFORD        | -   | 77.3  | 413.9   | -             | 20.7  | 110.9 | -         | -    | -     | 97.9     | 67,421.7             |
| VIRGINIA   | 51023 | BOTETOURT      | -   | -     | -       | -             | -     | -     | -         | -    | -     | -        | 95,073.5             |
| VIRGINIA   | 51029 | BUCKINGHAM     | -   | 331.1 | 1,988.0 | -             | 95.5  | 570.9 | -         | -    | -     | 426.6    | 96,450.3             |
| VIRGINIA   | 51031 | CAMPBELL       | -   | 12.3  | 130.7   | -             | 3.5   | 37.2  | -         | -    | -     | 15.8     | 95,758.2             |
| VIRGINIA   | 51033 | CAROLINE       | -   | 88.6  | 881.4   | -             | 29.5  | 283.2 | -         | 0.5  | 9.5   | 118.6    | 149,045.4            |
| VIRGINIA   | 51036 | CHARLES CITY   | -   | -     | -       | -             | -     | -     | -         | -    | -     | -        | 55,423.3             |
| VIRGINIA   | 51037 | CHARLOTTE      | -   | 0.0   | 0.2     | -             | 0.0   | 0.0   | -         | -    | -     | 0.0      | 9.9                  |
| VIRGINIA   | 51041 | CHESTERFIELD   | -   | -     | -       | -             | -     | -     | -         | -    | -     | -        | 443,917.3            |
| VIRGINIA   | 51043 | CLARKE         | -   | 118.3 | 835.0   | -             | 41.3  | 296.0 | -         | -    | -     | 159.6    | 75,344.6             |
| VIRGINIA   | 51045 | CRAIG          | -   | -     | -       | -             | -     | -     | -         | -    | -     | -        | 26,513.6             |
| VIRGINIA   | 51047 | CULPEPER       | -   | 471.8 | 2,355.0 | -             | 153.7 | 764.9 | -         | -    | -     | 625.5    | 165,853.1            |
| VIRGINIA   | 51049 | CUMBERLAND     | -   | 524.3 | 2,200.5 | -             | 136.7 | 564.6 | -         | -    | -     | 661.0    | 65,019.5             |
| VIRGINIA   | 51053 | DINWIDDIE      | -   | 78.9  | 370.0   | -             | 17.6  | 80.4  | -         | -    | -     | 96.5     | 30,118.0             |
| VIRGINIA   | 51057 | ESSEX          | -   | 338.6 | 1,476.2 | -             | 120.0 | 522.1 | -         | 41.6 | 221.8 | 500.2    | 62,894.7             |
| VIRGINIA   | 51059 | FAIRFAX        | -   | -     | -       | -             | -     | -     | -         | -    | -     | -        | 542,305.2            |
| VIRGINIA   | 51061 | FAUQUIER       | -   | 417.3 | 2,408.3 | -             | 122.6 | 730.0 | -         | -    | -     | 539.9    | 317,795.9            |
| VIRGINIA   | 51065 | FLUVANNA       | -   | 157.1 | 1,117.6 | -             | 40.5  | 280.4 | -         | -    | -     | 197.6    | 86,298.9             |
| VIRGINIA   | 51069 | FREDERICK      | -   | 143.4 | 1,563.3 | -             | 52.4  | 561.4 | -         | -    | -     | 195.8    | 240,600.6            |
| VIRGINIA   | 51071 | GILES          | -   | -     | -       | -             | -     | -     | -         | -    | -     | -        | 2,740.9              |
| VIRGINIA   | 51073 | GLOUCESTER     | -   | 267.7 | 1,247.1 | -             | 96.8  | 462.0 | -         | 20.4 | 127.0 | 384.9    | 245,154.6            |
| VIRGINIA   | 51075 | GOOCHLAND      | -   | -     | -       | -             | -     | -     | -         | -    | -     | -        | 110,343.7            |
| VIRGINIA   | 51079 | GREENE         | -   | 130.2 | 881.9   | -             | 51.9  | 337.1 | -         | -    | -     | 182.2    | 79,988.9             |
| VIRGINIA   | 51085 | HANOVER        | -   | -     | -       | -             | -     | -     | -         | -    | -     | -        | 354,292.3            |
| VIRGINIA   | 51087 | HENRICO        | -   | -     | -       | -             | -     | -     | -         | -    | -     | -        | 209,652.2            |
| VIRGINIA   | 51091 | HIGHLAND       | -   | 465.4 | 1,430.1 | -             | 221.7 | 671.1 | -         | -    | -     | 687.1    | 20,490.3             |
| VIRGINIA   | 51093 | ISLE OF WIGHT  | -   | 130.8 | 769.0   | -             | 50.2  | 293.1 | -         | 3.3  | 33.3  | 184.2    | 107,914.6            |
| VIRGINIA   | 51095 | JAMES CITY     | -   | 27.1  | 262.4   | -             | 9.1   | 88.0  | -         | 0.2  | 3.7   | 36.5     | 93,914.9             |
| VIRGINIA   | 51097 | KING AND QUEEN | -   | 534.4 | 1,613.9 | -             | 183.3 | 552.4 | -         | 21.3 | 74.8  | 739.0    | 55,513.0             |
| VIRGINIA   | 51099 | KING GEORGE    | -   | 31.4  | 376.1   | -             | 10.3  | 124.2 | -         | 4.1  | 44.3  | 45.8     | 87,910.2             |
| VIRGINIA   | 51101 | KING WILLIAM   | -   | 378.9 | 1,275.5 | -             | 136.9 | 454.2 | -         | 34.4 | 103.1 | 550.2    | 71,844.4             |
| VIRGINIA   | 51103 | LANCASTER      | -   | 195.0 | 873.3   | -             | 67.5  | 304.6 | -         | 42.0 | 251.6 | 304.5    | 85,850.1             |
| VIRGINIA   | 51107 | LOUDOUN        | -   | 334.4 | 2,280.1 | -             | 99.7  | 645.7 | -         | -    | -     | 434.1    | 196,926.7            |

Table 2

**NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES**

**CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.**

| STATE    | FIPS  | COUNTY          | L POUNDS OF NITROGEN LOADED BY FARM POPULATIONS USING OTHER MEANS OF WASTE DISPOSAL TO: |         |         |               |       |         |           |       |       | TOTAL 4f | TOTAL NITROGEN (lbs) |
|----------|-------|-----------------|---|---------|---------|---------------|-------|---------|-----------|-------|-------|----------|----------------------|
|          |       |                 | GROUND WATER  |         |         | SURFACE WATER |       |         | BAY WATER |       |       |          |                      |
|          |       |                 | MIN   | MEAN    | MAX     | MIN           | MEAN  | MAX     | MIN       | MEAN  | MAX   |          |                      |
| VIRGINIA | 51109 | LOUISA          | -   | 595.4   | 3,221.1 | -             | 133.4 | 714.5   | -         | -     | -     | 728.7    | 165,656.5            |
| VIRGINIA | 51111 | LUNENBERG       | -   | 0.0     | 0.2     | -             | 0.0   | 0.1     | -         | -     | -     | 0.0      | 21.1                 |
| VIRGINIA | 51113 | MADISON         | -   | 467.8   | 1,657.9 | -             | 159.6 | 553.5   | -         | -     | -     | 627.4    | 100,231.5            |
| VIRGINIA | 51115 | MATHEWS         | -   | 50.6    | 291.3   | -             | 25.7  | 146.1   | -         | 20.3  | 115.2 | 96.7     | 71,406.4             |
| VIRGINIA | 51119 | MIDDLESEX       | -   | 143.6   | 721.3   | -             | 53.8  | 263.4   | -         | 17.5  | 97.3  | 214.9    | 69,396.2             |
| VIRGINIA | 5112  | MONTGOMERY      | -   | -       | -       | -             | -     | -       | -         | -     | -     | -        | 4,575.6              |
| VIRGINIA | 51125 | NELSON          | -   | 493.5   | 2,404.3 | -             | 131.0 | 662.6   | -         | -     | -     | 624.5    | 102,537.0            |
| VIRGINIA | 51127 | NEW KENT        | -   | -       | -       | -             | -     | -       | -         | -     | -     | -        | 90,401.2             |
| VIRGINIA | 5113  | NORTHAMPTON     | -   | 410.8   | 1,762.9 | -             | 144.0 | 611.8   | -         | 99.2  | 418.8 | 654.0    | 57,349.7             |
| VIRGINIA | 51131 | NORTHUMBERLAND  | -   | 409.6   | 1,681.7 | -             | 149.8 | 610.7   | -         | 162.6 | 332.0 | 722.0    | 89,112.9             |
| VIRGINIA | 51135 | NOTTOWAY        | -   | 239.7   | 1,185.8 | -             | 66.8  | 321.5   | -         | -     | -     | 306.5    | 39,509.5             |
| VIRGINIA | 51137 | ORANGE          | -   | 266.8   | 1,586.8 | -             | 77.9  | 459.8   | -         | -     | -     | 344.7    | 121,558.7            |
| VIRGINIA | 51139 | PAGE            | -   | 76.6    | 929.5   | -             | 33.0  | 399.4   | -         | -     | -     | 109.6    | 119,441.8            |
| VIRGINIA | 51141 | POWHATAN        | -   | -       | -       | -             | -     | -       | -         | -     | -     | -        | 116,230.6            |
| VIRGINIA | 51147 | PRINCE EDWARD   | -   | 205.2   | 1,207.8 | -             | 69.3  | 397.0   | -         | -     | -     | 274.6    | 91,228.2             |
| VIRGINIA | 51149 | PRINCE GEORGE   | -   | 15.4    | 160.3   | -             | 6.3   | 65.6    | -         | 0.6   | 7.1   | 22.4     | 44,180.5             |
| VIRGINIA | 51151 | PRINCE WILLIAM  | -   | 66.9    | 727.2   | -             | 21.9  | 233.5   | -         | 0.8   | 19.8  | 89.6     | 323,742.8            |
| VIRGINIA | 51157 | RAPPAHANNOCK    | -   | 262.3   | 1,371.6 | -             | 75.0  | 391.8   | -         | -     | -     | 337.2    | 54,823.7             |
| VIRGINIA | 51159 | RICHMOND        | -   | 631.1   | 2,180.5 | -             | 235.1 | 801.6   | -         | 81.6  | 267.4 | 947.9    | 54,617.1             |
| VIRGINIA | 51161 | ROANOKE         | -   | -       | -       | -             | -     | -       | -         | -     | -     | -        | 8,882.1              |
| VIRGINIA | 51163 | ROCKBRIDGE      | -   | 556.0   | 2,934.6 | -             | 212.8 | 1,123.1 | -         | -     | -     | 768.8    | 134,865.2            |
| VIRGINIA | 51165 | ROCKINGHAM      | -   | 1,258.6 | 6,133.6 | -             | 516.5 | 2,465.4 | -         | -     | -     | 1,775.0  | 371,049.8            |
| VIRGINIA | 51171 | SHENANDOAH      | -   | 350.9   | 2,270.6 | -             | 139.0 | 883.5   | -         | -     | -     | 489.9    | 168,896.9            |
| VIRGINIA | 51177 | SPOTSYLVANIA    | -   | 58.0    | 827.4   | -             | 15.7  | 218.2   | -         | 7.0   | 51.8  | 80.7     | 230,263.9            |
| VIRGINIA | 51179 | STAFFORD        | -   | 17.7    | 305.8   | -             | 5.6   | 94.6    | -         | 1.2   | 16.4  | 24.4     | 230,140.5            |
| VIRGINIA | 51181 | SURRY           | -   | 69.9    | 392.1   | -             | 26.8  | 148.4   | -         | 5.7   | 33.1  | 102.4    | 23,620.2             |
| VIRGINIA | 51187 | WARREN          | -   | 36.8    | 411.0   | -             | 14.0  | 157.6   | -         | -     | -     | 50.8     | 129,580.8            |
| VIRGINIA | 51193 | WESTMORELAND    | -   | 748.6   | 2,583.7 | -             | 315.3 | 1,029.8 | -         | 245.1 | 654.3 | 1,309.0  | 108,938.4            |
| VIRGINIA | 51199 | YORK            | -   | 17.5    | 121.6   | -             | 9.6   | 66.3    | -         | -     | -     | 27.1     | 144,459.8            |
| VIRGINIA | 51510 | ALEXANDRIA      | -   | -       | -       | -             | -     | -       | -         | -     | -     | -        | 2,656.4              |
| VIRGINIA | 51530 | BUENA VISTA     | -   | -       | -       | -             | -     | -       | -         | -     | -     | -        | 2,092.2              |
| VIRGINIA | 51540 | CHARLOTTESVILLE | -   | -       | -       | -             | -     | -       | -         | -     | -     | -        | 6,836.9              |
| VIRGINIA | 51550 | CHESAPEAKE CITY | -   | 3.3     | 11.8    | -             | 1.8   | 6.5     | -         | -     | -     | 5.2      | 86,561.4             |

Table 12.

NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
 COUNTY SUMMARIES  
 NCR-CHESAPEAKE, Inc.

| STATE         | FIPS  | COUNTY              | L POUNDS OF NITROGEN LOADED BY FARM POPULATIONS USING OTHER MEANS OF WASTE DISPOSAL TO: |       |         |               |       |         |           |      |      | TOTAL NITROGEN (lbs) |          |           |
|---------------|-------|---------------------|---|-------|---------|---------------|-------|---------|-----------|------|------|----------------------|----------|-----------|
|               |       |                     | GROUND WATER  |       |         | SURFACE WATER |       |         | BAY WATER |      |      |                      |          |           |
|               |       |                     | MIN   | MEAN  | MAX     | MIN           | MEAN  | MAX     | MIN       | MEAN | MAX  |                      | TOTAL 4f |           |
| VIRGINIA      | 51560 | CLIFTON FORGE       | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 93.0      |
| VIRGINIA      | 51570 | COLONIAL HEIGHTS    | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 404.5     |
| VIRGINIA      | 51580 | COVINGTON           | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 236.0     |
| VIRGINIA      | 51600 | FAIRFAX             | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 2304.4    |
| VIRGINIA      | 51610 | FALLS CHURCH        | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 746.3     |
| VIRGINIA      | 51630 | FREDERICKSBURG      | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 1,514.2   |
| VIRGINIA      | 51650 | HAMPTON CITY        | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 24,744.6  |
| VIRGINIA      | 51660 | HARRISONBURG        | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 10,032.2  |
| VIRGINIA      | 51670 | HOPEWELL            | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 4,781.1   |
| VIRGINIA      | 51678 | LEXINGTON           | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 93.0      |
| VIRGINIA      | 51680 | LYNCIBURG           | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 97,36.1   |
| VIRGINIA      | 51683 | MANASSES CITY       | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 3,692.6   |
| VIRGINIA      | 51685 | MANASSES PARK CITY  | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | .         |
| VIRGINIA      | 51700 | NEWPORT NEWS CITY   | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | .         |
| VIRGINIA      | 51710 | NORFOLK CITY        | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 42,228.8  |
| VIRGINIA      | 51730 | PETERSBURG          | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 25,183.6  |
| VIRGINIA      | 51735 | POQUOSON            | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 2,150.5   |
| VIRGINIA      | 51740 | PORTSMOUTH CITY     | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 27,411.2  |
| VIRGINIA      | 51760 | RICHMOND CITY       | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 11,605.9  |
| VIRGINIA      | 51790 | STAUNTON            | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 42,135.2  |
| VIRGINIA      | 51800 | SUFFOLK CITY        | .   | 120.8 | 554.1   | .             | 51.7  | 235.3   | .         | 1.9  | 10.0 | 174.4                | .        | 7,434.5   |
| VIRGINIA      | 51810 | VIRGINIA BEACH CITY | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 166,699.3 |
| VIRGINIA      | 51820 | WAYNESBORO          | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 106,797.2 |
| VIRGINIA      | 51830 | WILLIAMSBURG        | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 10,201.6  |
| VIRGINIA      | 51840 | WINCHESTER          | .   | .     | .       | .             | .     | .       | .         | .    | .    | .                    | .        | 2,485.3   |
| WEST VIRGINIA | 54003 | BERKELEY            | .   | 491.8 | 2,711.2 | .             | 164.7 | 895.4   | .         | .    | .    | .                    | .        | 6,751.5   |
| WEST VIRGINIA | 54023 | GRANT               | .   | 227.5 | 1,060.5 | .             | 103.7 | 477.9   | .         | .    | .    | 656.6                | .        | 300,814.0 |
| WEST VIRGINIA | 54025 | GREENBRIAR          | .   | 0.0   | 0.0     | .             | 0.0   | 0.0     | .         | .    | .    | 331.2                | .        | 64,975.7  |
| WEST VIRGINIA | 54027 | HAMPSHIRE           | .   | 730.5 | 3,164.1 | .             | 342.6 | 1,467.7 | .         | .    | .    | 0.0                  | .        | 9.1       |
| WEST VIRGINIA | 54031 | HARDY               | .   | 759.3 | 2,828.0 | .             | 355.2 | 1,316.7 | .         | .    | .    | 1,073.1              | .        | 123,339.5 |
| WEST VIRGINIA | 54037 | JEFFERSON           | .   | 220.8 | 1,387.4 | .             | 67.7  | 425.2   | .         | .    | .    | 1,114.5              | .        | 71,414.4  |
| WEST VIRGINIA | 54057 | MINERAL             | .   | 55.6  | 491.5   | .             | 23.2  | 204.6   | .         | .    | .    | 288.5                | .        | 190,762.6 |
| WEST VIRGINIA | 54063 | MONROE              | .   | 8.0   | 85.1    | .             | 3.6   | 37.8    | .         | .    | .    | 78.8                 | .        | 118,722.6 |
|               |       |                     |   |       |         |               |       |         |           |      |      | 11.6                 |          | 6,607.6   |

Table 12

**NITROGEN LOADED TO GROUND WATER, SURFACE WATER AND  
THE BAY BY POPULATIONS USING SEPTIC AND OTHER MEANS  
OF NON-SEWERED WASTE DISPOSAL: COUNTY SUMMARIES**

CHESAPEAKE BAY PROGRAM SEPTIC PROJECT  
COUNTY SUMMARIES  
NCRI-CHESAPEAKE, Inc.

| STATE              | FIPS  | COUNTY     | POUNDS OF NITROGEN LOADED BY FARM POPULATIONS USING OTHER MEANS OF WASTE DISPOSAL TO: |                 |                  |               |                 |                 |           |                |                | TOTAL 4f        | TOTAL NITROGEN (lb) |
|--------------------|-------|------------|---|-----------------|------------------|---------------|-----------------|-----------------|-----------|----------------|----------------|-----------------|---------------------|
|                    |       |            | GROUND WATER  |                 |                  | SURFACE WATER |                 |                 | BAY WATER |                |                |                 |                     |
|                    |       |            | MIN   | MEAN            | MAX              | MIN           | MEAN            | MAX             | MIN       | MEAN           | MAX            |                 |                     |
| WEST VIRGINIA      | 54065 | MORGAN     | -   | 63.3            | 531.5            | -             | 29.2            | 242.1           | -         | -              | -              | 92.5            | 81,623.1            |
| WEST VIRGINIA      | 54071 | PENDLETON  | -   | 1,206.9         | 3,430.4          | -             | 544.3           | 1,531.8         | -         | -              | -              | 1,751.3         | 60,862.1            |
| WEST VIRGINIA      | 54075 | POCAHONTAS | -   | 0.1             | 0.5              | -             | 0.1             | 0.3             | -         | -              | -              | 0.2             | 20.1                |
| WEST VIRGINIA      | 54077 | PRESTON    | -   | 0.8             | 5.9              | -             | 0.3             | 2.0             | -         | -              | -              | 1.0             | 431.9               |
| WEST VIRGINIA      | 54083 | RANDOLPH   | -   | 0.0             | 0.1              | -             | 0.0             | 0.1             | -         | -              | -              | 0.0             | 15.9                |
| WEST VIRGINIA      | 54093 | TUCKER     | -   | -               | -                | -             | -               | -               | -         | -              | -              | -               | 63.1                |
| <b>Grand Total</b> |       |            | <b>1,371.6</b>  | <b>58,022.6</b> | <b>242,524.2</b> | <b>519.3</b>  | <b>11,776.5</b> | <b>89,566.9</b> | <b>-</b>  | <b>1,634.7</b> | <b>7,361.5</b> | <b>81,433.9</b> | <b>33,473,566.1</b> |

Table 12

Table 13. POUNDS OF NITROGEN LOADED BY HOUSING TYPE AND WASTE DISPOSAL MEANS TO GROUND WATER, SURFACE WATER, AND THE BAY: MODEL SEGMENT SUMMARIES

| Mod Seg | Mod Seg Name      | Sub-basin               | Fail Line | a. POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING SEPTIC FIELDS TO |           |           |               |          |           |           |          |          | TOTAL <sup>a</sup> |
|---------|-------------------|-------------------------|-----------|--|-----------|-----------|---------------|----------|-----------|-----------|----------|----------|--------------------|
|         |                   |                         |           | GROUND WATER   |           |           | SURFACE WATER |          |           | BAY WATER |          |          |                    |
|         |                   |                         |           | MIN  | MEAN      | MAX       | MIN           | MEAN     | MAX       | MIN       | MEAN     | MAX      |                    |
| 10      | East Branch 1     | Susquehanna             | Above     | 49,080.9   | 79,346.4  | 121,896.9 | 22,132.6      | 35,837.1 | 55,308.2  | -         | -        | -        | 115,183.4          |
| 20      | East Branch 1     | Susquehanna             | Above     | 57,624.9   | 107,429.7 | 180,516.3 | 34,515.3      | 60,311.8 | 97,381.8  | -         | -        | -        | 167,711.6          |
| 30      | East Branch 2     | Susquehanna             | Above     | 23,976.0   | 54,262.5  | 109,757.1 | 10,482.6      | 25,987.3 | 51,955.5  | -         | -        | -        | 82,219.8           |
| 40      | East Branch 2     | Susquehanna             | Above     | 12,690.0   | 34,902.5  | 79,081.7  | 6,008.4       | 17,470.9 | 36,898.8  | -         | -        | -        | 54,313.4           |
| 50      | West Branch       | Susquehanna             | Above     | 327.9  | 3,549.3   | 8,658.3   | 125.8         | 1,422.6  | 3,452.9   | -         | -        | -        | 4,911.9            |
| 60      | West Branch       | Susquehanna             | Above     | 9,789.6  | 21,394.0  | 44,122.1  | 3,827.5       | 8,665.6  | 16,986.5  | -         | -        | -        | 31,059.6           |
| 70      | West Branch       | Susquehanna             | Above     | 20,968.2   | 30,819.2  | 44,603.8  | 8,667.7       | 12,919.9 | 18,521.9  | -         | -        | -        | 43,739.1           |
| 80      | Lower Susquehanna | Susquehanna             | Above     | 11,116.3   | 35,525.6  | 74,614.8  | 4,430.9       | 13,870.5 | 28,785.8  | -         | -        | -        | 49,366.0           |
| 90      | Junata            | Susquehanna             | Above     | -  | 1.9       | 7.6       | -             | 0.7      | 2.7       | -         | -        | -        | 2.6                |
| 100     | Junata            | Susquehanna             | Above     | 15,961.1   | 36,774.3  | 71,007.0  | 6,306.3       | 14,444.9 | 27,564.4  | -         | -        | -        | 51,219.2           |
| 110     | Lower Susquehanna | Susquehanna             | Above     | 82,158.1   | 172,888.4 | 304,642.6 | 29,256.6      | 60,433.9 | 105,151.4 | -         | -        | -        | 233,322.3          |
| 120     | Conowingo         | Susquehanna             | Above     | 243.1  | 2,947.9   | 6,225.4   | 81.1          | 973.4    | 2,029.0   | -         | -        | -        | 3,921.3            |
| 140     | Conowingo         | Susquehanna             | Above     | 35.7   | 794.1     | 1,828.9   | 12.4          | 273.5    | 621.1     | -         | -        | -        | 1,067.6            |
| 160     | Upper Potomac     | Potomac                 | Above     | 9,475.6  | 21,130.0  | 43,298.0  | 4,347.9       | 10,471.0 | 19,418.8  | -         | -        | -        | 33,601.8           |
| 170     | Upper Potomac     | Potomac                 | Above     | -  | 0.3       | 1.3       | -             | 0.1      | 0.5       | -         | -        | -        | 0.4                |
| 175     | Upper Potomac     | Potomac                 | Above     | -  | 0.3       | 1.3       | -             | 0.1      | 0.5       | -         | -        | -        | 0.4                |
| 180     | Mid Potomac       | Potomac                 | Above     | 41,551.9   | 67,831.1  | 103,368.8 | 12,240.8      | 19,677.6 | 29,658.4  | -         | -        | -        | 87,508.6           |
| 190     | Shenandoah        | Potomac                 | Above     | 18,318.6   | 44,196.7  | 81,196.2  | 7,174.4       | 16,929.4 | 30,688.7  | -         | -        | -        | 61,123.1           |
| 200     | Shenandoah        | Potomac                 | Above     | 3,874.5  | 13,515.8  | 27,090.0  | 1,535.8       | 5,186.4  | 10,180.6  | -         | -        | -        | 18,702.1           |
| 210     | Lower Potomac     | Potomac                 | Above     | 77,262.5   | 121,996.6 | 177,070.2 | 27,662.8      | 42,804.2 | 61,215.6  | -         | -        | -        | 164,801.1          |
| 220     | Lower Potomac     | Potomac                 | Above     | 151,539.8  | 257,802.9 | 400,229.1 | 55,134.0      | 91,311.8 | 139,251.4 | -         | -        | -        | 350,891.1          |
| 230     | Rappahannock      | Rappahannock            | Above     | 1,526.7  | 6,841.0   | 13,758.0  | 540.1         | 2,384.6  | 4,705.6   | 806.8     | 1,776.5  | 3,213.6  | 9,225.6            |
| 235     | Mataponi          | York                    | Above     | 2,384.7  | 5,342.2   | 8,971.6   | 710.8         | 1,560.5  | 2,579.6   | -         | -        | -        | 6,902.6            |
| 240     | Mataponi          | York                    | Above     | -  | -         | -         | -             | -        | -         | -         | -        | -        | -                  |
| 250     | Panunkey          | York                    | Above     | -  | 130.2     | 397.8     | -             | 41.4     | 123.0     | -         | -        | -        | 171.7              |
| 260     | Panunkey          | York                    | Above     | 725.8  | 1,322.8   | 2,015.1   | 266.0         | 476.6    | 716.7     | -         | -        | -        | 1,789.4            |
| 265     | James             | James                   | Above     | -  | -         | -         | -             | -        | -         | -         | -        | -        | -                  |
| 270     | James             | James                   | Above     | 223.4  | 1,736.9   | 5,215.4   | 115.5         | 781.4    | 2,278.8   | -         | -        | -        | 2,516.2            |
| 280     | James             | James                   | Above     | 136,937.2  | 215,838.7 | 317,853.6 | 42,700.7      | 68,624.7 | 97,653.4  | -         | -        | -        | 282,263.3          |
| 290     | James             | James                   | Above     | 8,688.2  | 22,129.3  | 41,849.8  | 2,419.9       | 5,877.7  | 10,818.0  | -         | -        | -        | 28,007.0           |
| 300     | Appomattox        | Appomattox              | Above     | 353.5  | 2,340.4   | 5,352.1   | 158.4         | 1,001.4  | 2,205.6   | -         | -        | -        | 3,341.6            |
| 310     | Appomattox        | Appomattox              | Above     | 1.7  | 164.8     | 347.6     | 0.3           | 30.5     | 63.8      | -         | -        | -        | 193.3              |
| 330     | Patuxent          | Patuxent                | Above     | 14,995.4   | 22,231.6  | 31,266.1  | 5,495.3       | 8,015.9  | 11,144.9  | -         | -        | -        | 30,247.5           |
| 340     | Patuxent          | Patuxent                | Above     | 16,190.2   | 50,577.2  | 103,194.8 | 5,475.5       | 16,954.7 | 34,305.2  | -         | -        | -        | 67,531.6           |
| 370     | Bohemia           | Upper Eastern Shore     | Below     | -  | 17.2      | 40.5      | -             | 5.0      | 11.7      | -         | -        | -        | 22.2               |
| 380     | Chester           | Upper Eastern Shore     | Below     | 1,409.1  | 2,189.1   | 3,331.8   | 398.9         | 609.6    | 917.4     | 57.4      | 121.3    | 274.7    | 2,920.0            |
| 390     | Wye               | Upper Eastern Shore     | Below     | -  | -         | -         | -             | -        | -         | -         | -        | -        | -                  |
| 400     | Lower Choptank    | Upper Eastern Shore     | Below     | 721.8  | 2,906.2   | 5,606.8   | 232.1         | 901.1    | 1,721.2   | 67.0      | 689.6    | 1,429.4  | 4,496.9            |
| 410     | Lower Nanticoke   | Lower Eastern Shore     | Below     | 2,428.2  | 7,329.1   | 13,400.8  | 747.2         | 2,249.5  | 4,076.9   | 109.2     | 332.8    | 614.6    | 9,911.4            |
| 420     | Wicomico          | Lower Eastern Shore     | Below     | 509.0  | 3,555.4   | 10,110.6  | 177.0         | 1,237.9  | 3,534.3   | -         | 219.4    | 581.4    | 5,012.6            |
| 430     | Pocomoke          | Lower Eastern Shore     | Below     | -  | 1,091.3   | 3,200.2   | -             | 468.3    | 1,321.6   | -         | 89.0     | 371.9    | 1,648.6            |
| 440     | Coast 4           | Lower Eastern Shore     | Below     | -  | -         | -         | -             | -        | -         | -         | -        | -        | -                  |
| 450     | Coast 11          | West Chesapeake         | Below     | 55,916.6   | 98,381.1  | 152,418.2 | 17,547.8      | 30,302.7 | 46,333.7  | -         | -        | -        | 128,706.3          |
| 470     | Gunpowder         | West Chesapeake         | Below     | 90,813.4   | 145,228.6 | 218,124.0 | 28,318.4      | 48,786.0 | 59,511.4  | 11,025.5  | 16,217.4 | 22,831.4 | 208,232.3          |
| 480     | Baltimore         | West Chesapeake         | Below     | 17,176.4   | 63,096.3  | 140,941.0 | 6,089.2       | 21,260.0 | 46,273.5  | -         | 659.5    | 1,978.1  | 85,015.7           |
| 490     | Lower Patapsco    | West Chesapeake         | Below     | 78,025.3   | 143,694.9 | 238,207.6 | 20,089.4      | 37,650.4 | 63,107.8  | 13,778.1  | 19,451.5 | 27,187.0 | 200,796.8          |
| 500     | Patuxent          | Patuxent/Mid Chesapeake | Below     | 52,912.9   | 86,484.9  | 130,543.7 | 19,093.3      | 30,294.4 | 44,806.3  | 17,766.1  | 22,574.7 | 27,825.0 | 139,354.1          |
| 510     | Seven             | Patuxent/Mid Chesapeake | Below     | 43,647.6   | 69,006.1  | 102,384.5 | 11,908.5      | 18,569.7 | 26,791.6  | 11,683.6  | 16,629.6 | 22,690.8 | 105,105.4          |

Table 13

**Table 13. POUNDS OF NITROGEN LOADED BY HOUSING TYPE AND WASTE DISPOSAL MEANS TO GROUND WATER, SURFACE WATER, AND THE BAY: MODEL SEGMENT SUMMARIES**

|         |                   |                         |           | a. POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING SEPTIC FIELDS TO |             |             |               |             |             |           |           |           | TOTAL <sup>a</sup> |
|---------|-------------------|-------------------------|-----------|--|-------------|-------------|---------------|-------------|-------------|-----------|-----------|-----------|--------------------|
|         |                   |                         |           | GROUND WATER   |             |             | SURFACE WATER |             |             | BAY WATER |           |           |                    |
| Mod Seg | Mod Seg Name      | Sub-basin               | Fall Line | MIN  | MEAN        | MAX         | MIN           | MEAN        | MAX         | MIN       | MEAN      | MAX       |                    |
| 540     | Anacostia         | Potomac                 | Below     | 9,169.3  | 47,481.7    | 113,614.4   | 3,260.9       | 16,418.6    | 38,690.2    | -         | 281.0     | 952.4     | 64,181.4           |
| 550     | Ocoquan           | Potomac                 | Below     | 27,876.0   | 63,251.4    | 115,808.5   | 9,583.6       | 20,845.9    | 37,311.9    | 700.9     | 1,548.1   | 2,671.7   | 85,645.5           |
| 560     | Rappahannock      | Rappahannock            | Below     | 5,055.7  | 16,509.6    | 33,474.7    | 2,057.8       | 6,510.1     | 12,985.2    | 485.7     | 1,361.7   | 2,674.0   | 24,381.3           |
| 580     | Great Wicomico    | Rappahannock            | Below     | -  | -           | -           | -             | -           | -           | -         | -         | -         | -                  |
| 590     | York              | Rappahannock            | Below     | 43,874.6   | 64,794.3    | 91,237.6    | 16,858.6      | 24,608.0    | 34,478.4    | 20,066.1  | 27,573.3  | 36,224.7  | 116,975.6          |
| 600     | James             | James                   | Below     | 91,681.0   | 236,568.1   | 448,107.9   | 30,352.3      | 78,664.1    | 149,448.2   | 3,410.1   | 8,926.2   | 17,235.8  | 324,358.4          |
| 610     | Chickahominy      | James                   | Below     | 34,043.7   | 81,346.0    | 150,777.2   | 11,315.6      | 26,317.8    | 47,872.4    | -         | -         | -         | 107,663.8          |
| 620     | Nansemond         | James                   | Below     | 44,628.7   | 65,943.4    | 92,969.8    | 20,514.3      | 30,091.3    | 42,183.4    | 7,707.4   | 10,070.1  | 12,700.9  | 106,104.8          |
| 630     | Elizabeth         | James                   | Below     | 5,106.3  | 12,042.1    | 22,521.9    | 2,647.8       | 5,948.6     | 10,841.5    | 284.2     | 1,741.6   | 4,414.9   | 19,732.3           |
| 700     | East Branch 1     | Susquehanna             | Above     | -  | 16.4        | 76.8        | -             | -           | -           | -         | -         | -         | -                  |
| 710     | Lower Susquehanna | Susquehanna             | Above     | 10,033.5   | 24,962.1    | 47,499.0    | 3,380.2       | 8,228.0     | 15,470.4    | -         | -         | -         | 23.3               |
| 720     | Conowago          | Susquehanna             | Above     | 12,977.3   | 43,138.3    | 91,500.4    | 4,166.3       | 13,806.8    | 29,070.2    | -         | -         | -         | 33,190.1           |
| 730     | Mid Potomac       | Potomac                 | Above     | 359.8  | 2,968.8     | 7,386.5     | 133.2         | 1,065.0     | 2,598.7     | -         | -         | -         | 56,945.2           |
| 740     | Mid Potomac       | Potomac                 | Above     | 8,025.5  | 20,915.0    | 40,508.4    | 2,761.6       | 6,733.4     | 12,618.2    | -         | -         | -         | 4,033.6            |
| 750     | Lower Potomac     | Potomac                 | Above     | -  | 305.0       | 795.7       | -             | -           | 98.6        | -         | -         | -         | 27,648.4           |
| 760     | Upper Patuxent    | West Chesapeake         | Below     | 25,024.1   | 48,384.1    | 79,083.4    | 9,018.7       | 16,872.7    | 27,022.6    | -         | -         | -         | 403.7              |
| 770     | Upper Choptank    | Upper Eastern Shore     | Below     | 7.1  | 41.8        | 85.4        | 2.6           | 15.2        | 30.8        | -         | -         | -         | 65,256.8           |
| 780     | Upper Nantuxent   | Lower Eastern Shore     | Below     | -  | 15.4        | 52.5        | -             | 5.6         | 18.7        | -         | -         | -         | 56.7               |
| 800     | Coast 1a          | Upper Eastern Shore     | Below     | 3,513.3  | 6,067.3     | 9,391.0     | 1,313.0       | 2,171.0     | 3,260.5     | -         | 136.3     | 348.7     | 21.0               |
| 810     | Coast 1b          | Upper Eastern Shore     | Below     | -  | -           | -           | -             | -           | -           | -         | -         | -         | -                  |
| 820     | Coast 1c          | Upper Eastern Shore     | Below     | -  | -           | -           | -             | -           | -           | -         | -         | -         | 8,375.1            |
| 830     | Coast 1d          | Upper Eastern Shore     | Below     | 339.6  | 2,268.9     | 5,652.1     | 99.1          | 635.7       | 1,568.5     | -         | 104.6     | 290.0     | -                  |
| 840     | Coast 1e          | Upper Eastern Shore     | Below     | -  | 198.7       | 624.5       | -             | 65.7        | 204.5       | -         | -         | -         | 3,009.2            |
| 850     | Coast 6a          | West Chesapeake         | Below     | 1,344.0  | 6,744.8     | 15,070.0    | 433.8         | 2,160.7     | 4,774.4     | 417.3     | 1,476.9   | 3,069.8   | 264.4              |
| 860     | Coast 6b          | West Chesapeake         | Below     | 3,027.0  | 27,285.7    | 75,274.1    | 1,016.5       | 9,051.2     | 24,861.2    | 1,544.7   | 10,899.7  | 21,355.3  | 10,382.3           |
| 870     | Coast 6c          | West Chesapeake         | Below     | 65,056.4   | 121,047.5   | 163,834.9   | 22,081.0      | 31,132.5    | 41,800.0    | 31,571.1  | 45,744.5  | 61,183.4  | 47,236.6           |
| 880     | Coast 5           | Patuxent/Mid Chesapeake | Below     | 44,570.6   | 70,233.7    | 102,787.1   | 13,881.0      | 21,465.3    | 31,015.1    | 30,124.2  | 45,293.1  | 73,837.6  | 197,924.4          |
| 890     | Potomac 1         | Potomac                 | Below     | 2,590.5  | 15,087.8    | 40,508.6    | 981.7         | 5,411.1     | 14,272.8    | -         | 142.9     | 543.0     | 140,962.1          |
| 900     | Potomac 2         | Potomac                 | Below     | 13,754.1   | 73,174.4    | 173,465.9   | 4,486.9       | 23,198.4    | 54,998.9    | 47.4      | 1,048.0   | 2,943.9   | 20,641.6           |
| 910     | Potomac 3         | Potomac                 | Below     | 20,705.0   | 61,456.5    | 125,453.0   | 7,818.2       | 22,637.7    | 45,482.5    | 272.0     | 1,877.9   | 4,419.3   | 97,418.7           |
| 920     | Potomac 4         | Potomac                 | Below     | 15,674.4   | 30,204.4    | 50,202.4    | 5,798.6       | 10,944.4    | 17,929.8    | -         | -         | -         | 85,972.1           |
| 930     | Coast 8a          | Rappahannock            | Below     | -  | -           | -           | -             | -           | -           | -         | -         | -         | 41,148.8           |
| 940     | Coast 8b          | Rappahannock            | Below     | 1,915.5  | 3,011.2     | 4,260.9     | 655.3         | 1,088.2     | 1,579.5     | 34.2      | 210.7     | 415.4     | 4,308.1            |
| 950     | Coast 8c          | Rappahannock            | Below     | 14,859.7   | 35,701.4    | 66,541.9    | 8,073.6       | 19,412.5    | 38,016.1    | 20,818.8  | 34,128.2  | 50,775.1  | 89,242.1           |
| 960     | Coast 9           | James                   | Below     | 50,488.0   | 117,294.9   | 224,190.4   | 23,235.4      | 54,532.4    | 105,150.1   | 1,538.2   | 16,048.9  | 35,179.9  | 189,876.2          |
| 970     | Potomac 5         | Potomac                 | Below     | 904.9  | 4,645.9     | 11,027.0    | 254.3         | 1,368.3     | 3,351.3     | -         | 213.1     | 586.9     | 6,245.4            |
| 980     | Potomac 6         | Potomac                 | Below     | 928.3  | 3,751.2     | 7,938.9     | 356.0         | 1,424.7     | 2,893.2     | 268.4     | 1,263.4   | 2,690.4   | 6,439.3            |
| 990     | Coast 11          | Patuxent/Mid Chesapeake | Below     | 6.8  | 506.8       | 1,130.4     | 2.4           | 171.2       | 378.2       | -         | 135.2     | 284.2     | 813.3              |
| (1)     | CHESAPEAKE BAY    |                         |           | -  | -           | -           | 81.9          | 157.4       | 282.4       | 14,191.5  | 22,983.4  | 34,721.9  | 23,140.8           |
| (2)     | JAMES RIVER       |                         |           | -  | -           | -           | 206.4         | 401.0       | 645.6       | 2,937.6   | 4,813.5   | 7,559.6   | 5,214.5            |
| (3)     | PATUXENT RIVER    |                         |           | -  | -           | -           | -             | -           | -           | 1,131.5   | 1,439.1   | 1,772.5   | 1,439.1            |
| (4)     | POTOMAC RIVER     |                         |           | -  | -           | -           | -             | -           | -           | 197.6     | 895.0     | 2,012.3   | 896.0              |
| (5)     | RAPPAHANNOCK      |                         |           | -  | -           | -           | -             | -           | -           | 89.9      | 279.6     | 547.6     | 279.6              |
| (6)     | YORK RIVER        |                         |           | -  | -           | -           | -             | -           | -           | 4280.7    | 5895.9    | 7,734.3   | 6,115.4            |
| TOTAL   |                   |                         |           | 1,689,212.9  | 3,373,789.1 | 5,838,836.9 | 604,676.6     | 1,197,179.9 | 2,060,663.6 | 208,413.1 | 331,333.6 | 491,262.9 | 4,902,302.6        |

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Table 13

**Table 13. POUNDS OF NITROGEN LOADED BY HOUSING TYPE AND WASTE DISPOSAL MEANS TO GROUND WATER, SURFACE WATER, AND THE BAY: MODEL SEGMENT SUMMARIES**

|         |                   |                         |          | D. POUNDS OF NITROGEN LOADED BY RURAL POPULATIONS USING SPETIC FIELDS TO: |             |             |               |           |           |           |          |          | TOTAL b     |
|---------|-------------------|-------------------------|----------|---|-------------|-------------|---------------|-----------|-----------|-----------|----------|----------|-------------|
|         |                   |                         |          | GROUND WATER  |             |             | SURFACE WATER |           |           | BAY WATER |          |          |             |
| Mod Seg | Mod Seg Name      | Sub-basin               | Fall Lhe | MIN   | MEAN        | MAX         | MIN           | MEAN      | MAX       | MIN       | MEAN     | MAX      |             |
| 10      | East Branch 1     | Susquehanna             | Above    | 433,732.6   | 567,143.0   | 709,741.8   | 204,599.2     | 262,690.3 | 324,504.9 | -         | -        | -        | 829,433.3   |
| 20      | East Branch 1     | Susquehanna             | Above    | 1,014,651.4   | 1,323,635.2 | 1,654,009.3 | 478,341.3     | 613,962.4 | 758,667.4 | -         | -        | -        | 1,937,598.0 |
| 30      | East Branch 2     | Susquehanna             | Above    | 395,300.0   | 508,176.4   | 628,598.0   | 211,895.8     | 267,851.1 | 327,425.3 | -         | -        | -        | 776,627.5   |
| 40      | East Branch 2     | Susquehanna             | Above    | 426,157.9   | 568,071.4   | 725,079.1   | 183,758.7     | 241,923.9 | 306,331.5 | -         | -        | -        | 809,495.3   |
| 50      | West Branch       | Susquehanna             | Above    | 249,150.1   | 334,199.9   | 428,332.4   | 96,789.5      | 127,638.6 | 161,681.4 | -         | -        | -        | 461,438.5   |
| 60      | West Branch       | Susquehanna             | Above    | 311,516.2   | 418,733.4   | 538,645.9   | 127,635.6     | 167,946.9 | 212,811.3 | -         | -        | -        | 586,680.3   |
| 70      | West Branch       | Susquehanna             | Above    | 274,982.1   | 358,505.8   | 443,943.0   | 110,663.4     | 141,329.2 | 174,236.3 | -         | -        | -        | 497,435.0   |
| 80      | Lower Susquehanna | Susquehanna             | Above    | 625,838.8   | 817,952.9   | 1,029,249.2 | 235,031.5     | 302,519.9 | 376,672.7 | -         | -        | -        | 1,120,471.8 |
| 90      | Junata            | Susquehanna             | Above    | 169,403.4   | 217,058.7   | 268,365.3   | 65,857.4      | 83,106.0  | 101,706.1 | -         | -        | -        | 300,167.7   |
| 100     | Junata            | Susquehanna             | Above    | 444,960.2   | 563,626.9   | 759,579.2   | 180,430.4     | 236,651.8 | 299,211.4 | -         | -        | -        | 830,178.5   |
| 110     | Lower Susquehanna | Susquehanna             | Above    | 873,077.7   | 1,111,087.6 | 1,502,796.2 | 306,951.3     | 404,567.4 | 512,781.1 | -         | -        | -        | 1,575,655.0 |
| 120     | Corowingo         | Susquehanna             | Above    | 159,576.7   | 200,162.5   | 244,581.6   | 52,867.8      | 65,263.3  | 78,892.2  | -         | -        | -        | 265,426.3   |
| 140     | Corowingo         | Susquehanna             | Above    | 141,757.5   | 177,594.3   | 214,933.1   | 50,108.4      | 61,719.7  | 73,832.4  | -         | -        | -        | 239,314.0   |
| 160     | Upper Potomac     | Potomac                 | Above    | 128,982.7   | 169,279.6   | 259,900.9   | 54,653.6      | 79,806.3  | 109,321.3 | -         | -        | -        | 269,066.4   |
| 170     | Upper Potomac     | Potomac                 | Above    | 70,027.7  | 96,078.2    | 126,401.4   | 33,287.9      | 44,997.9  | 56,581.2  | -         | -        | -        | 141,076.1   |
| 175     | Upper Potomac     | Potomac                 | Above    | 89,372.1  | 121,783.2   | 158,057.8   | 41,890.4      | 56,010.7  | 71,703.3  | -         | -        | -        | 177,793.9   |
| 180     | Mid Potomac       | Potomac                 | Above    | 240,912.8   | 323,726.4   | 415,848.6   | 69,688.7      | 92,295.8  | 117,475.4 | -         | -        | -        | 416,022.2   |
| 190     | Shenandoah        | Potomac                 | Above    | 314,992.7   | 419,895.9   | 537,266.8   | 131,004.9     | 171,726.1 | 217,073.5 | -         | -        | -        | 591,622.0   |
| 200     | Shenandoah        | Potomac                 | Above    | 269,368.5   | 369,392.6   | 484,133.2   | 109,791.9     | 147,502.5 | 190,541.9 | -         | -        | -        | 516,495.1   |
| 210     | Lower Potomac     | Potomac                 | Above    | 312,145.0   | 403,373.4   | 505,196.4   | 109,929.9     | 139,724.9 | 172,941.9 | -         | -        | -        | 543,098.2   |
| 220     | Lower Potomac     | Potomac                 | Above    | 181,551.7   | 245,617.2   | 317,940.9   | 61,844.2      | 82,515.8  | 105,682.2 | -         | -        | -        | 328,133.1   |
| 230     | Rappahannock      | Rappahannock            | Above    | 299,222.4   | 360,116.9   | 489,404.5   | 94,976.2      | 122,076.0 | 151,720.0 | -         | -        | -        | 512,192.9   |
| 235     | Mattaponi         | York                    | Above    | 68,702.7  | 91,303.5    | 115,693.5   | 19,308.6      | 25,299.0  | 31,751.7  | -         | -        | -        | 116,602.5   |
| 240     | Mattaponi         | York                    | Above    | 51,490.1  | 71,524.9    | 93,682.3    | 15,651.9      | 21,376.7  | 27,672.8  | -         | -        | -        | 92,901.6    |
| 250     | Panunkey          | York                    | Above    | 56,417.1  | 74,481.0    | 94,139.5    | 14,997.3      | 19,438.9  | 24,261.5  | -         | -        | -        | 93,919.9    |
| 260     | Panunkey          | York                    | Above    | 146,749.1   | 191,729.8   | 240,047.3   | 38,623.8      | 49,682.3  | 61,581.9  | -         | -        | -        | 241,112.1   |
| 265     | James             | James                   | Above    | 5,963.7   | 8,206.0     | 12,079.8    | 2,437.6       | 3,886.9   | 5,651.6   | -         | -        | -        | 12,092.8    |
| 270     | James             | James                   | Above    | 193,101.1   | 265,544.2   | 347,600.6   | 80,302.6      | 109,134.0 | 141,783.4 | -         | -        | -        | 374,678.2   |
| 280     | James             | James                   | Above    | 466,116.8   | 623,858.7   | 795,809.3   | 136,045.1     | 179,364.7 | 226,471.3 | -         | -        | -        | 803,123.4   |
| 290     | James             | James                   | Above    | 111,897.4   | 146,401.0   | 183,410.6   | 33,837.1      | 43,714.0  | 54,281.0  | -         | -        | -        | 190,115.0   |
| 300     | Appomattox        | Appomattox              | Above    | 144,195.2   | 191,433.3   | 242,810.3   | 44,351.5      | 57,826.5  | 72,452.6  | -         | -        | -        | 249,159.8   |
| 310     | Appomattox        | Appomattox              | Above    | 27,269.9  | 34,969.3    | 43,082.3    | 6,132.2       | 7,748.6   | 9,453.4   | -         | -        | -        | 42,117.9    |
| 330     | Patuxent          | Patuxent                | Above    | 78,424.3  | 97,866.3    | 117,525.7   | 29,006.1      | 35,593.3  | 42,248.6  | -         | -        | -        | 133,460.0   |
| 340     | Patuxent          | Patuxent                | Above    | 60,972.0  | 80,570.5    | 102,222.8   | 21,594.1      | 28,110.5  | 35,289.9  | -         | -        | -        | 108,581.1   |
| 370     | Bohemia           | Upper Eastern Shore     | Below    | 12,266.2  | 15,719.2    | 19,254.8    | 3,732.3       | 4,697.9   | 5,679.7   | 2,215.4   | 2,779.2  | 3,310.8  | 23,196.4    |
| 380     | Chester           | Upper Eastern Shore     | Below    | 73,004.2  | 97,151.3    | 124,286.9   | 22,551.6      | 29,528.5  | 37,351.7  | 7,147.6   | 9,434.6  | 12,027.9 | 136,114.4   |
| 390     | Wye               | Upper Eastern Shore     | Below    | 15,014.4  | 20,094.4    | 25,722.8    | 4,817.2       | 6,334.8   | 8,011.1   | 6,684.1   | 8,779.3  | 11,052.7 | 35,208.5    |
| 400     | Lower Choptank    | Upper Eastern Shore     | Below    | 94,073.9  | 121,545.7   | 152,454.7   | 29,611.2      | 37,809.0  | 46,618.0  | 10,135.7  | 13,213.6 | 16,793.9 | 172,368.3   |
| 410     | Lower Nanticoke   | Lower Eastern Shore     | Below    | 202,208.3   | 262,812.3   | 328,889.7   | 65,890.7      | 84,205.1  | 104,170.9 | 8,115.1   | 10,576.7 | 13,262.8 | 357,594.0   |
| 420     | Wicomico          | Lower Eastern Shore     | Below    | 121,587.8   | 165,979.9   | 215,534.9   | 44,221.7      | 59,392.7  | 76,257.9  | 5,736.2   | 7,606.5  | 9,792.0  | 232,379.2   |
| 430     | Pocomoke          | Lower Eastern Shore     | Below    | 104,173.9   | 136,347.0   | 172,484.3   | 40,130.7      | 52,012.3  | 65,383.5  | 8,109.4   | 11,645.8 | 16,278.6 | 200,205.6   |
| 440     | Coast 4           | Lower Eastern Shore     | Below    | 63,509.6  | 87,076.8    | 112,390.9   | 25,333.8      | 34,112.3  | 43,446.1  | 11,792.7  | 15,752.9 | 20,068.1 | 136,342.3   |
| 450     | Coast 11          | West Chesapeake         | Below    | 470,911.5   | 607,791.1   | 755,163.6   | 158,692.0     | 201,017.3 | 246,473.3 | 5,787.5   | 8,798.5  | 12,432.1 | 817,806.6   |
| 470     | Gurpolder         | West Chesapeake         | Below    | 273,589.9   | 347,899.6   | 425,235.3   | 97,581.3      | 121,961.0 | 147,353.4 | 1,918.0   | 2,441.4  | 2,982.2  | 472,302.0   |
| 480     | Baltimore         | West Chesapeake         | Below    | 32,922.3  | 41,039.6    | 49,205.5    | 11,442.2      | 14,078.3  | 16,689.8  | -         | -        | -        | 55,118.0    |
| 490     | Lower Patapsco    | West Chesapeake         | Below    | 15,382.5  | 24,603.5    | 33,067.5    | 4,843.9       | 7,624.5   | 10,773.8  | 3,943.5   | 6,233.1  | 8,620.6  | 36,461.4    |
| 500     | Patuxent          | Patuxent/Mid Chesapeake | Below    | 246,119.4   | 314,992.0   | 388,078.9   | 89,026.8      | 112,160.9 | 138,663.9 | 26,007.0  | 33,046.3 | 40,413.5 | 460,199.2   |
| 510     | Severn            | Patuxent/Mid Chesapeake | Below    | 39,271.8  | 50,040.0    | 61,595.6    | 10,978.6      | 13,763.5  | 16,752.5  | 12,379.8  | 15,738.4 | 19,274.6 | 79,541.9    |

Table 13

**Table 13. POUNDS OF NITROGEN LOADED BY HOUSING TYPE AND WASTE DISPOSAL MEANS TO GROUND WATER, SURFACE WATER, AND THE BAY: MODEL SEGMENT SUMMARIES**

|              |                   |                         |           | b. POUNDS OF NITROGEN LOADED BY RURAL POPULATIONS USING SPETICFIELDS TO: |                     |                     |                    |                    |                    |                  |                  |                  | TOTAL <sup>b</sup>  |
|--------------|-------------------|-------------------------|-----------|--|---------------------|---------------------|--------------------|--------------------|--------------------|------------------|------------------|------------------|---------------------|
|              |                   |                         |           | GROUND WATER   |                     |                     | SURFACE WATER      |                    |                    | BAY WATER        |                  |                  |                     |
| Mod Seg      | Mod Seg Name      | Sub-basin               | Fall Line | MIN  | MEAN                | MAX                 | MIN                | MEAN               | MAX                | MIN              | MEAN             | MAX              |                     |
| 540          | Anacostia         | Potomac                 | Below     | 6,589.7  | 9,991.1             | 14,772.5            | 2,408.1            | 3,572.6            | 5,044.2            | -                | -                | -                | 13,563.6            |
| 550          | Ocoquan           | Potomac                 | Below     | 276,118.9  | 365,492.1           | 462,876.4           | 93,858.3           | 122,343.2          | 153,315.1          | 0.0              | 55.2             | 126.2            | 487,890.5           |
| 560          | Rappahannock      | Rappahannock            | Below     | 139,619.6  | 193,021.5           | 252,232.1           | 51,224.7           | 69,823.9           | 90,394.6           | 27,447.9         | 37,843.0         | 49,351.0         | 300,688.4           |
| 580          | Great Wicomico    | Rappahannock            | Below     | 8,697.8  | 11,892.5            | 15,318.1            | 3,164.1            | 4,282.5            | 5,482.5            | 5,522.3          | 7,978.4          | 10,828.9         | 24,153.4            |
| 590          | York              | Rappahannock            | Below     | 182,070.1  | 235,777.0           | 292,894.8           | 65,670.8           | 83,914.6           | 103,347.1          | 12,512.4         | 16,261.6         | 20,467.5         | 335,953.2           |
| 600          | James             | James                   | Below     | 281,051.3  | 359,603.3           | 469,394.5           | 90,946.0           | 123,443.8          | 159,419.4          | 18,674.5         | 25,230.3         | 32,518.2         | 508,277.3           |
| 610          | Chickahominy      | James                   | Below     | 78,650.6   | 106,362.4           | 137,176.1           | 28,327.9           | 37,517.8           | 47,671.1           | -                | -                | -                | 143,880.2           |
| 620          | Nansemond         | James                   | Below     | 29,105.9   | 38,636.3            | 49,204.8            | 12,250.4           | 16,034.1           | 20,221.8           | 204.2            | 414.2            | 661.3            | 55,084.6            |
| 630          | Elizabeth         | James                   | Below     | 7.5  | 53.7                | 98.3                | 4.3                | 29.9               | 54.1               | -                | -                | -                | 83.7                |
| 700          | East Branch 1     | Susquehanna             | Above     | 36,117.1   | 45,291.3            | 55,052.8            | 18,050.2           | 22,284.3           | 26,801.6           | -                | -                | -                | 67,575.6            |
| 710          | Lower Susquehanna | Susquehanna             | Above     | 150,033.0  | 200,845.4           | 257,267.4           | 52,640.5           | 69,202.5           | 87,495.0           | -                | -                | -                | 270,047.9           |
| 720          | Conowingo         | Susquehanna             | Above     | 296,520.0  | 400,023.3           | 519,454.0           | 98,956.1           | 131,231.9          | 168,369.2          | -                | -                | -                | 531,255.1           |
| 730          | Mid Potomac       | Potomac                 | Above     | 137,489.0  | 188,807.4           | 248,064.3           | 51,252.9           | 69,174.9           | 89,772.3           | -                | -                | -                | 257,982.4           |
| 740          | Mid Potomac       | Potomac                 | Above     | 424,896.4  | 575,519.5           | 740,239.1           | 150,536.2          | 200,245.0          | 254,280.2          | -                | -                | -                | 775,764.5           |
| 750          | Lower Potomac     | Potomac                 | Above     | 60,109.3   | 81,262.9            | 104,748.7           | 19,013.5           | 25,225.3           | 32,090.2           | -                | -                | -                | 106,488.2           |
| 760          | Upper Patuxent    | West Chesapeake         | Below     | 257,654.4  | 333,121.0           | 412,149.1           | 96,138.6           | 122,214.4          | 149,452.3          | -                | -                | -                | 455,335.4           |
| 770          | Upper Choptank    | Upper Eastern Shore     | Below     | 45,706.0   | 56,903.2            | 68,391.6            | 16,656.6           | 20,395.3           | 24,231.4           | -                | -                | -                | 77,298.5            |
| 780          | Upper Nanook      | Lower Eastern Shore     | Below     | 18,636.3   | 23,034.1            | 27,656.5            | 6,119.9            | 7,417.9            | 8,781.4            | -                | -                | -                | 30,452.1            |
| 800          | Coast 1a          | Upper Eastern Shore     | Below     | 37,094.2   | 50,871.7            | 66,309.8            | 12,486.7           | 16,794.7           | 21,593.2           | 7,972.6          | 10,426.7         | 13,082.2         | 78,093.0            |
| 810          | Coast 1b          | Upper Eastern Shore     | Below     | 22,444.3   | 31,705.9            | 42,741.2            | 6,851.3            | 9,545.9            | 12,739.4           | 5,010.0          | 7,261.2          | 9,985.1          | 48,513.0            |
| 820          | Coast 1c          | Upper Eastern Shore     | Below     | 23,711.2   | 32,406.2            | 42,045.1            | 8,924.0            | 11,971.8           | 15,327.9           | 29,680.4         | 40,230.3         | 51,990.1         | 84,608.4            |
| 830          | Coast 1d          | Upper Eastern Shore     | Below     | 26,823.9   | 35,992.7            | 46,262.9            | 8,657.7            | 11,409.9           | 14,479.7           | 24,012.6         | 31,791.0         | 40,404.8         | 79,193.6            |
| 840          | Coast 1e          | Upper Eastern Shore     | Below     | 24,608.0   | 33,927.7            | 44,032.8            | 9,548.0            | 12,962.3           | 16,645.3           | 8,187.7          | 10,995.5         | 14,021.4         | 57,885.6            |
| 850          | Coast 6a          | West Chesapeake         | Below     | 5,516.2  | 10,130.7            | 16,130.1            | 1,836.8            | 3,322.7            | 5,234.2            | 743.4            | 1,504.4          | 2,455.5          | 14,957.9            |
| 860          | Coast 6b          | West Chesapeake         | Below     | 3,359.7  | 4,252.5             | 5,296.5             | 1,129.1            | 1,405.8            | 1,731.1            | 2,399.9          | 3,127.1          | 3,941.1          | 8,785.4             |
| 870          | Coast 6c          | West Chesapeake         | Below     | 7,951.4  | 10,105.1            | 12,549.6            | 2,536.0            | 3,178.5            | 3,909.4            | 6,128.8          | 7,963.0          | 9,992.9          | 21,246.7            |
| 880          | Coast 5           | Patuxent/Mid Chesapeake | Below     | 102,564.8  | 135,142.4           | 169,883.3           | 34,768.4           | 45,211.2           | 58,344.7           | 14,248.0         | 19,382.3         | 25,251.8         | 199,736.0           |
| 890          | Potomac 1         | Potomac                 | Below     | 11,056.4   | 14,769.0            | 18,833.9            | 3,946.0            | 5,185.1            | 6,537.6            | 84.2             | 84.8             | 106.6            | 20,048.9            |
| 900          | Potomac 2         | Potomac                 | Below     | 8,624.4  | 11,995.7            | 15,883.2            | 2,881.6            | 3,936.9            | 5,152.2            | 2,798.5          | 3,749.6          | 4,789.5          | 19,682.3            |
| 910          | Potomac 3         | Potomac                 | Below     | 43,502.7   | 64,945.9            | 89,471.2            | 16,391.6           | 24,205.4           | 33,088.2           | 2,587.9          | 3,592.0          | 4,836.8          | 92,743.3            |
| 920          | Potomac 4         | Potomac                 | Below     | 225,182.3  | 298,454.1           | 378,559.3           | 63,041.1           | 108,220.2          | 135,691.5          | 32,604.3         | 43,798.8         | 58,087.3         | 450,472.9           |
| 930          | Coast 8a          | Rappahannock            | Below     | 8,843.7  | 12,329.8            | 16,340.4            | 3,600.4            | 5,199.9            | 6,802.4            | 7,041.4          | 9,727.3          | 12,803.0         | 27,256.9            |
| 940          | Coast 8b          | Rappahannock            | Below     | 93,650.2   | 122,456.3           | 153,048.1           | 39,517.4           | 50,908.6           | 62,990.9           | 26,689.3         | 34,774.9         | 43,522.3         | 208,137.8           |
| 950          | Coast 8c          | Rappahannock            | Below     | 9,007.4  | 13,472.0            | 18,569.2            | 4,933.5            | 7,250.1            | 9,857.2            | 11,590.0         | 14,720.2         | 18,068.6         | 35,442.3            |
| 960          | Coast 9           | James                   | Below     | 168.9  | 373.8               | 583.6               | 84.3               | 198.8              | 304.1              | -                | -                | -                | 572.6               |
| 970          | Potomac 5         | Potomac                 | Below     | 14,616.0   | 20,681.4            | 27,614.6            | 4,347.3            | 6,020.1            | 7,913.7            | 115.4            | 397.8            | 759.6            | 27,099.4            |
| 980          | Potomac 6         | Potomac                 | Below     | 153,476.7  | 211,974.2           | 277,125.6           | 53,207.8           | 72,473.1           | 93,848.8           | 20,943.5         | 28,378.8         | 36,557.2         | 312,826.1           |
| 990          | Coast 12          | Patuxent/Mid Chesapeake | Below     | 5,525.8  | 7,532.8             | 9,654.7             | 1,915.9            | 2,568.1            | 3,320.9            | 3,422.7          | 4,454.0          | 5,547.1          | 14,554.8            |
| (1)          | CHESAPEAKE BAY    |                         |           | 328.0  | 522.1               | 759.3               | 655.7              | 915.3              | 1,223.5            | 33,416.8         | 45,491.4         | 59,173.9         | 46,928.8            |
| (2)          | JAMES RIVER       |                         |           | -  | -                   | -                   | 409.5              | 512.6              | 628.3              | 2,108.7          | 2,848.5          | 3,673.9          | 3,361.1             |
| (3)          | PATUXENT RIVER    |                         |           | -  | -                   | -                   | -                  | -                  | -                  | 2,560.8          | 3,228.5          | 3,919.7          | 3,228.5             |
| (4)          | POTOMAC RIVER     |                         |           | -  | -                   | -                   | 85.9               | 109.2              | 132.8              | 7,334.8          | 9,816.8          | 12,562.0         | 9,926.0             |
| (5)          | RAPPAHANNOCK      |                         |           | -  | -                   | -                   | 81.4               | 132.5              | 195.5              | 3,170.6          | 4,393.7          | 5,772.7          | 4,526.2             |
| (6)          | YORK RIVER        |                         |           | -  | -                   | -                   | -                  | 0.6                | 1.5                | 1,990.7          | 2,591.5          | 3,277.7          | 2,592.1             |
| <b>TOTAL</b> |                   |                         |           | <b>13,838,264.5</b>  | <b>18,333,871.3</b> | <b>23,273,669.7</b> | <b>5,222,406.8</b> | <b>6,805,495.8</b> | <b>8,540,288.8</b> | <b>431,177.3</b> | <b>518,769.5</b> | <b>742,823.7</b> | <b>25,718,137.0</b> |

Table 13

**Table 13. POUNDS OF NITROGEN LOADED BY HOUSING TYPE AND WASTE DISPOSAL MEANS TO GROUND WATER, SURFACEWATER, AND THE BAY: MODEL SEGMENT SUMMARIES**

| Mod Seg | Mod Seg Name      | Sub-basin               | Fall Line | c. POUNDS OF NITROGEN LOADED BY FARM POPULATIONS TO: |          |           |               |          |          |           |         |         | TOTAL c  |
|---------|-------------------|-------------------------|-----------|--|----------|-----------|---------------|----------|----------|-----------|---------|---------|----------|
|         |                   |                         |           | GROUND WATER   |          |           | SURFACE WATER |          |          | BAY WATER |         |         |          |
|         |                   |                         |           | MIN  | MEAN     | MAX       | MIN           | MEAN     | MAX      | MIN       | MEAN    | MAX     |          |
| 10      | East Branch 1     | Susquehanna             | Above     | 5,275.1  | 28,648.6 | 63,642.7  | 2,616.8       | 13,703.7 | 29,906.0 | -         | -       | -       | 42,352.3 |
| 20      | East Branch 1     | Susquehanna             | Above     | 3,932.7  | 56,933.1 | 135,767.2 | 1,810.8       | 26,101.8 | 61,593.5 | -         | -       | -       | 83,034.9 |
| 30      | East Branch 2     | Susquehanna             | Above     | 4,342.5  | 19,802.9 | 41,123.7  | 2,269.6       | 10,408.9 | 21,414.2 | -         | -       | -       | 30,211.8 |
| 40      | East Branch 2     | Susquehanna             | Above     | 6,370.6  | 20,474.1 | 41,069.0  | 2,421.4       | 7,905.9  | 15,915.9 | -         | -       | -       | 28,380.0 |
| 50      | West Branch       | Susquehanna             | Above     | 901.1  | 6,063.1  | 14,636.3  | 366.8         | 2,368.2  | 5,611.5  | -         | -       | -       | 8,431.2  |
| 60      | West Branch       | Susquehanna             | Above     | 3,567.3  | 18,761.5 | 40,323.6  | 1,554.3       | 7,819.6  | 16,469.1 | -         | -       | -       | 26,581.1 |
| 70      | West Branch       | Susquehanna             | Above     | 6,513.5  | 20,842.0 | 40,859.6  | 2,575.1       | 8,077.8  | 15,710.4 | -         | -       | -       | 28,919.9 |
| 80      | Lower Susquehanna | Susquehanna             | Above     | 20,114.2   | 55,844.8 | 102,296.9 | 7,522.4       | 20,414.4 | 36,963.7 | -         | -       | -       | 76,259.2 |
| 90      | Juniata           | Susquehanna             | Above     | 4,133.4  | 12,089.5 | 22,240.8  | 1,569.5       | 4,574.8  | 8,353.5  | -         | -       | -       | 16,664.4 |
| 100     | Juniata           | Susquehanna             | Above     | 11,184.3   | 35,118.8 | 67,621.8  | 4,446.7       | 13,788.9 | 28,301.9 | -         | -       | -       | 48,907.6 |
| 110     | Lower Susquehanna | Susquehanna             | Above     | 10,596.3   | 56,966.4 | 123,910.7 | 3,658.3       | 19,685.2 | 42,465.8 | -         | -       | -       | 76,651.7 |
| 120     | Conowingo         | Susquehanna             | Above     | 7,062.7  | 23,671.5 | 43,796.3  | 2,345.8       | 7,741.7  | 14,164.9 | -         | -       | -       | 31,413.1 |
| 140     | Conowingo         | Susquehanna             | Above     | 3,243.9  | 12,975.5 | 25,787.1  | 1,164.0       | 4,557.7  | 8,931.5  | -         | -       | -       | 17,533.3 |
| 160     | Upper Potomac     | Potomac                 | Above     | 980.5  | 7,803.5  | 18,114.3  | 384.3         | 3,181.3  | 7,332.0  | -         | -       | -       | 10,984.8 |
| 170     | Upper Potomac     | Potomac                 | Above     | 929.0  | 9,337.2  | 21,216.4  | 425.7         | 4,303.5  | 9,707.3  | -         | -       | -       | 13,640.7 |
| 175     | Upper Potomac     | Potomac                 | Above     | 1,284.7  | 7,404.7  | 16,490.4  | 593.7         | 3,443.1  | 7,620.4  | -         | -       | -       | 10,847.6 |
| 180     | Mid Potomac       | Potomac                 | Above     | 3,651.9  | 20,949.9 | 45,111.8  | 1,024.4       | 5,788.8  | 12,315.9 | -         | -       | -       | 26,738.5 |
| 190     | Shenandoah        | Potomac                 | Above     | 7,580.0  | 38,183.6 | 79,888.7  | 3,000.9       | 15,145.8 | 31,498.4 | -         | -       | -       | 53,329.3 |
| 200     | Shenandoah        | Potomac                 | Above     | 1,829.7  | 24,383.7 | 54,535.9  | 693.3         | 9,250.4  | 20,511.7 | -         | -       | -       | 33,634.2 |
| 210     | Lower Potomac     | Potomac                 | Above     | 4,295.2  | 26,290.1 | 54,786.4  | 1,512.3       | 9,013.0  | 18,594.4 | -         | -       | -       | 35,303.1 |
| 220     | Lower Potomac     | Potomac                 | Above     | 2,828.7  | 15,738.8 | 32,905.4  | 798.8         | 4,648.4  | 9,758.6  | -         | -       | -       | 20,383.2 |
| 230     | Rappahannock      | Rappahannock            | Above     | 3,893.0  | 25,425.7 | 54,967.5  | 1,260.2       | 8,015.2  | 17,160.7 | -         | -       | -       | 33,440.9 |
| 235     | Mattaponi         | York                    | Above     | 380.0  | 3,574.3  | 8,864.8   | 175.1         | 1,043.7  | 2,469.1  | -         | -       | -       | 4,618.0  |
| 240     | Mattaponi         | York                    | Above     | 31.0   | 2,104.8  | 5,865.7   | 10.3          | 624.5    | 1,720.0  | -         | -       | -       | 2,729.3  |
| 250     | Famunkey          | York                    | Above     | 259.3  | 3,721.9  | 8,667.6   | 71.2          | 1,000.0  | 2,280.8  | -         | -       | -       | 4,721.9  |
| 260     | Famunkey          | York                    | Above     | 247.6  | 10,533.1 | 25,603.7  | 70.2          | 2,709.9  | 6,489.0  | -         | -       | -       | 13,243.0 |
| 265     | James             | James                   | Above     | 114.6  | 805.5    | 1,759.8   | 54.9          | 373.1    | 805.1    | -         | -       | -       | 1,178.7  |
| 270     | James             | James                   | Above     | 2,370.6  | 17,655.1 | 39,592.0  | 1,022.3       | 7,219.0  | 15,961.1 | -         | -       | -       | 24,674.2 |
| 280     | James             | James                   | Above     | 514.9  | 23,732.6 | 65,050.3  | 128.7         | 7,225.2  | 18,164.1 | -         | -       | -       | 32,957.9 |
| 290     | James             | James                   | Above     | 305.8  | 3,054.8  | 14,684.6  | 74.9          | 1,698.6  | 4,157.5  | -         | -       | -       | 7,753.4  |
| 300     | Appomattox        | Appomattox              | Above     | 914.5  | 13,510.2 | 31,669.6  | 230.4         | 3,977.4  | 9,258.6  | -         | -       | -       | 17,487.6 |
| 310     | Appomattox        | Appomattox              | Above     | 133.0  | 1,835.1  | 4,296.5   | 30.6          | 412.4    | 952.5    | -         | -       | -       | 2,247.5  |
| 330     | Patuxent          | Patuxent                | Above     | 630.0  | 4,097.3  | 8,887.1   | 231.2         | 1,498.6  | 3,218.5  | -         | -       | -       | 5,595.9  |
| 340     | Patuxent          | Patuxent                | Above     | 519.0  | 2,931.7  | 6,422.4   | 208.3         | 1,047.5  | 2,242.3  | -         | -       | -       | 3,979.2  |
| 370     | Bohemia           | Upper Eastern Shore     | Below     | 96.4   | 968.6    | 2,304.0   | 29.0          | 284.8    | 672.3    | 0.1       | 98.6    | 295.5   | 1,352.0  |
| 380     | Chester           | Upper Eastern Shore     | Below     | 2,075.1  | 9,698.5  | 19,645.8  | 623.6         | 2,904.6  | 5,835.7  | 132.8     | 898.1   | 1897.2  | 13,501.2 |
| 390     | Wye               | Upper Eastern Shore     | Below     | 295.8  | 1,599.0  | 3,414.9   | 96.8          | 504.3    | 1,081.1  | 75.5      | 365.7   | 808.5   | 2,469.0  |
| 400     | Lower Choptank    | Upper Eastern Shore     | Below     | 2,489.9  | 13,144.3 | 28,655.4  | 794.1         | 4,064.8  | 8,131.0  | 115.5     | 987.4   | 2,167.5 | 18,196.5 |
| 410     | Lower Nanticoke   | Lower Eastern Shore     | Below     | 2,894.9  | 17,484.7 | 37,325.2  | 969.0         | 5,706.5  | 12,020.5 | 19.3      | 479.5   | 1,143.7 | 23,650.7 |
| 420     | Wicomico          | Lower Eastern Shore     | Below     | 428.8  | 5,060.6  | 11,752.8  | 151.9         | 1,793.6  | 4,110.6  | 3.6       | 296.0   | 740.8   | 7,151.2  |
| 430     | Pocomoke          | Lower Eastern Shore     | Below     | 2,038.7  | 12,796.5 | 28,351.0  | 718.5         | 4,726.4  | 9,733.0  | 47.7      | 429.3   | 1,035.9 | 17,952.2 |
| 440     | Coast 4           | Lower Eastern Shore     | Below     | 22.9   | 3,677.7  | 10,479.2  | 8.1           | 1,391.5  | 3,951.1  | 5.1       | 836.5   | 2,237.6 | 5,905.7  |
| 450     | Coast 11          | West Chesapeake         | Below     | 13,686.0   | 38,178.9 | 71,995.5  | 4,849.3       | 13,046.0 | 24,102.2 | -         | 19.3    | 99.8    | 51,244.2 |
| 470     | Gunpowder         | West Chesapeake         | Below     | 1,330.2  | 12,865.6 | 29,547.7  | 494.9         | 4,562.8  | 10,319.4 | -         | 24.6    | 83.9    | 17,453.1 |
| 480     | Baltimore         | West Chesapeake         | Below     | -  | 362.8    | 1,300.8   | -             | 127.9    | 432.2    | -         | -       | -       | 510.4    |
| 490     | Lower Patapsco    | West Chesapeake         | Below     | -  | 728.4    | 1,810.0   | -             | 235.8    | 577.9    | -         | -       | -       | 964.2    |
| 500     | Patuxent          | Patuxent/Mid Chesapeake | Below     | 926.3  | 12,127.9 | 28,036.1  | 332.7         | 4,286.3  | 9,826.0  | 68.1      | 1,048.7 | 2,551.0 | 17,462.9 |
| 510     | Savern            | Patuxent/Mid Chesapeake | Below     | -  | 193.9    | 606.9     | -             | 53.0     | 163.2    | -         | 46.8    | 156.2   | 283.7    |

Table 13

**Table 13. POUNDS OF NITROGEN LOADED BY HOUSING TYPE AND WASTE DISPOSAL MEANS TO GROUND WATER, SURFACE WATER, AND THE BAY: MODEL SEGMENT SUMMARIES**

| Mod Seg | Mod Seg Name      | Sub-basin               | Fall Line | c. POUNDS OF NITROGEN LOADED BY FARM POPULATIONS TO: |           |             |               |           |           |           |          |          | TOTAL c     |
|---------|-------------------|-------------------------|-----------|--|-----------|-------------|---------------|-----------|-----------|-----------|----------|----------|-------------|
|         |                   |                         |           | GROUND WATER   |           |             | SURFACE WATER |           |           | BAY WATER |          |          |             |
|         |                   |                         |           | MIN  | MEAN      | MAX         | MIN           | MEAN      | MAX       | MIN       | MEAN     | MAX      |             |
| 540     | Ancostia          | Potomac                 | Below     | 12.6   | 272.6     | 694.3       | 4.5           | 95.7      | 241.0     | -         | -        | -        | 368.3       |
| 550     | Osoquan           | Potomac                 | Below     | 442.4  | 9,247.3   | 22,884.2    | 156.1         | 3,203.1   | 7,829.4   | -         | 0.0      | 0.0      | 12,450.4    |
| 560     | Rappahannock      | Rappahannock            | Below     | 163.0  | 8,504.2   | 21,689.6    | 53.0          | 3,018.0   | 7,633.7   | 33.5      | 1,433.9  | 3,719.7  | 12,956.0    |
| 580     | Great Wicomico    | Rappahannock            | Below     | -  | 452.9     | 1,286.0     | -             | 158.6     | 447.1     | -         | 105.4    | 302.9    | 717.0       |
| 590     | York              | Rappahannock            | Below     | 304.6  | 7,823.0   | 17,429.5    | 108.4         | 2,450.9   | 8,032.7   | 9.1       | 312.5    | 775.5    | 9,786.4     |
| 600     | James             | James                   | Below     | 62.8   | 8,133.0   | 23,248.1    | 26.9          | 2,948.0   | 8,127.1   | 0.3       | 392.7    | 1,155.1  | 11,873.7    |
| 610     | Chickahominy      | James                   | Below     | 161.9  | 2,528.8   | 6,269.9     | 65.3          | 935.1     | 2,267.8   | -         | -        | -        | 3,463.9     |
| 620     | Nassemond         | James                   | Below     | 77.0   | 2,318.9   | 5,484.1     | 32.7          | 852.3     | 2,232.9   | 0.0       | 8.8      | 24.9     | 3,280.0     |
| 630     | Elizabeth         | James                   | Below     | -  | 8.5       | 27.5        | -             | 4.7       | 15.1      | -         | -        | -        | 13.2        |
| 700     | East Branch 1     | Susquehanna             | Above     | 1,460.5  | 4,136.9   | 7,412.4     | 728.5         | 2,030.8   | 3,600.0   | -         | -        | -        | 6,167.7     |
| 710     | Lower Susquehanna | Susquehanna             | Above     | 2,371.4  | 14,727.4  | 31,819.0    | 822.0         | 5,004.9   | 10,693.2  | -         | -        | -        | 19,732.3    |
| 720     | Conowingo         | Susquehanna             | Above     | 16,287.8   | 51,517.0  | 95,929.7    | 5,217.8       | 16,461.2  | 30,429.0  | -         | -        | -        | 67,976.3    |
| 730     | Mt Potomac        | Potomac                 | Above     | 3,198.9  | 16,358.4  | 33,472.9    | 1,264.6       | 6,045.8   | 12,172.8  | -         | -        | -        | 22,404.2    |
| 740     | Mt Potomac        | Potomac                 | Above     | 1,604.2  | 21,071.7  | 53,265.0    | 669.9         | 7,446.0   | 18,440.0  | -         | -        | -        | 28,517.7    |
| 750     | Lower Potomac     | Potomac                 | Above     | 1,417.6  | 5,314.8   | 10,984.5    | 461.3         | 1,675.8   | 3,400.9   | -         | -        | -        | 6,990.4     |
| 760     | Upper Patuxco     | West Chesapeake         | Below     | 216.6  | 7,452.3   | 20,445.9    | 85.2          | 2,805.2   | 7,391.0   | -         | -        | -        | 10,457.5    |
| 770     | Upper Choptank    | Upper Eastern Shore     | Below     | 124.1  | 3,813.9   | 6,885.4     | 43.4          | 1,075.5   | 2,432.1   | -         | -        | -        | 4,089.4     |
| 780     | Upper Nanticoke   | Lower Eastern Shore     | Below     | 900.9  | 2,559.9   | 4,539.4     | 297.0         | 830.0     | 1,452.7   | -         | -        | -        | 3,389.9     |
| 800     | Coast 1a          | Upper Eastern Shore     | Below     | 46.1   | 1,258.1   | 3,184.8     | 14.3          | 406.5     | 1,024.5   | 4.9       | 240.0    | 592.3    | 1,904.6     |
| 810     | Coast 1b          | Upper Eastern Shore     | Below     | 206.8  | 2,438.5   | 6,222.6     | 59.4          | 836.7     | 1,826.1   | 3.8       | 474.6    | 1,127.4  | 4,149.9     |
| 820     | Coast 1c          | Upper Eastern Shore     | Below     | 11.5   | 421.8     | 1,303.2     | 3.8           | 157.6     | 481.4     | 7.4       | 423.6    | 1,332.9  | 1,003.0     |
| 830     | Coast 1d          | Upper Eastern Shore     | Below     | 350.9  | 2,300.7   | 5,071.9     | 115.5         | 735.4     | 1,599.5   | 216.9     | 1,891.4  | 4,236.3  | 4,927.5     |
| 840     | Coast 1e          | Upper Eastern Shore     | Below     | -  | 1,635.2   | 4,444.0     | -             | 595.6     | 1,611.8   | -         | 209.9    | 647.6    | 2,440.7     |
| 850     | Coast 6a          | West Chesapeake         | Below     | -  | -         | -           | -             | -         | -         | -         | -        | -        | -           |
| 860     | Coast 6b          | West Chesapeake         | Below     | -  | -         | -           | -             | -         | -         | -         | -        | -        | -           |
| 870     | Coast 6c          | West Chesapeake         | Below     | -  | -         | -           | -             | -         | -         | -         | -        | -        | -           |
| 880     | Coast 5           | Patuxent/Mtd Chesapeake | Below     | 240.0  | 4,259.1   | 10,515.5    | 83.9          | 1,437.8   | 3,517.8   | -         | 479.8    | 1,244.2  | 6,176.8     |
| 890     | Potomac 1         | Potomac                 | Below     | -  | 77.1      | 267.0       | -             | 27.0      | 92.6      | -         | 13.0     | 36.7     | 117.2       |
| 900     | Potomac 2         | Potomac                 | Below     | -  | 194.2     | 545.4       | -             | 57.3      | 159.0     | -         | 83.4     | 231.7    | 334.9       |
| 910     | Potomac 3         | Potomac                 | Below     | 0.0  | 1,251.0   | 3,637.0     | 0.0           | 459.5     | 1,315.6   | -         | 117.6    | 314.4    | 1,828.1     |
| 920     | Potomac 4         | Potomac                 | Below     | 2,279.2  | 16,173.9  | 38,150.2    | 854.4         | 5,885.1   | 12,984.6  | 63.4      | 1,596.5  | 4,066.5  | 23,655.5    |
| 930     | Coast 8a          | Rappahannock            | Below     | 14.1   | 596.3     | 1,409.9     | 6.1           | 245.5     | 572.4     | 10.4      | 399.7    | 961.4    | 1,241.5     |
| 940     | Coast 8b          | Rappahannock            | Below     | 57.6   | 3,280.0   | 8,267.8     | 20.4          | 1,215.6   | 3,207.0   | -         | 340.1    | 1,005.1  | 4,583.6     |
| 950     | Coast 8c          | Rappahannock            | Below     | -  | 49.9      | 311.2       | -             | 27.7      | 170.5     | -         | -        | -        | 77.6        |
| 960     | Coast 9           | James                   | Below     | -  | 55.0      | 142.3       | -             | 29.4      | 74.5      | -         | -        | -        | 84.5        |
| 970     | Potomac 5         | Potomac                 | Below     | -  | 307.0     | 827.4       | -             | 91.5      | 243.7     | -         | -        | -        | 398.5       |
| 980     | Potomac 6         | Potomac                 | Below     | 10.1   | 4,515.3   | 13,321.9    | 3.4           | 1,653.2   | 4,775.4   | -         | 1,128.7  | 3,048.6  | 7,297.2     |
| 990     | Coast 12          | Patuxent/Mtd Chesapeake | Below     | -  | 281.4     | 792.5       | -             | 98.5      | 272.6     | -         | 157.1    | 433.9    | 537.1       |
| (1)     | CHESAPEAKE BAY    |                         |           | -  | 0.2       | 1.9         | 1.6           | 21.8      | 50.7      | 114.3     | 1,342.8  | 3,248.7  | 1,364.8     |
| (2)     | JANES RIVER       |                         |           | -  | -         | -           | -             | 2.6       | 6.7       | 0.0       | 36.8     | 111.5    | 39.4        |
| (3)     | PATUXENT RIVER    |                         |           | -  | -         | -           | -             | -         | -         | 9.7       | 112.0    | 289.5    | 112.0       |
| (4)     | POTOMAC RIVER     |                         |           | -  | -         | -           | -             | 3.3       | 9.5       | 5.2       | 330.1    | 858.5    | 333.4       |
| (5)     | RAPPAHANNOCK      |                         |           | -  | -         | -           | -             | -         | -         | 3.0       | 138.0    | 343.2    | 138.0       |
| (6)     | YORK RIVER        |                         |           | -  | -         | -           | -             | -         | -         | 1.4       | 38.3     | 86.6     | 36.3        |
| TOTAL   |                   |                         |           | 179,220.0  | 969,335.0 | 2,093,846.2 | 68,610.2      | 353,583.7 | 755,770.5 | 951.1     | 17,336.7 | 43,472.4 | 1,340,455.3 |

**Table 13. POUNDS OF NITROGEN LOADED BY HOUSING TYPE AND WASTE DISPOSAL MEANS TO GROUND WATER, SURFACE WATER, AND THE BAY: MODEL SEGMENT SUMMARIES**

| Mod Seg | Mod Seg Name      | Sub-basin               | Fall Line | d. POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |          |           |               |          |          |           |         |         | TOTAL    |
|---------|-------------------|-------------------------|-----------|---|----------|-----------|---------------|----------|----------|-----------|---------|---------|----------|
|         |                   |                         |           | GROUND WATER  |          |           | SURFACE WATER |          |          | BAY WATER |         |         |          |
|         |                   |                         |           | MIN   | MEAN     | MAX       | MIN           | MEAN     | MAX      | MIN       | MEAN    | MAX     |          |
| 10      | East Branch 1     | Susquehanna             | Above     | -   | 893.6    | 2,816.6   | -             | 429.9    | 1,329.8  | -         | -       | -       | 1,323.5  |
| 20      | East Branch 1     | Susquehanna             | Above     | 52.2  | 1,819.0  | 5,708.0   | 27.6          | 781.7    | 2,739.9  | -         | -       | -       | 2,400.7  |
| 30      | East Branch 2     | Susquehanna             | Above     | -   | 3,028.6  | 11,291.3  | -             | 1,567.1  | 5,718.9  | -         | -       | -       | 4,595.7  |
| 40      | East Branch 2     | Susquehanna             | Above     | 330.7   | 3,270.3  | 10,611.7  | 133.3         | 1,458.4  | 4,705.2  | -         | -       | -       | 4,728.7  |
| 50      | West Branch       | Susquehanna             | Above     | -   | 3.6      | 19.6      | -             | 1.2      | 6.7      | -         | -       | -       | 4.8      |
| 50      | West Branch       | Susquehanna             | Above     | 70.6  | 1,185.3  | 3,002.9   | 31.1          | 491.1    | 1,231.7  | -         | -       | -       | 1,676.5  |
| 70      | West Branch       | Susquehanna             | Above     | -   | 203.7    | 713.7     | -             | 131.1    | 434.8    | -         | -       | -       | 334.8    |
| 80      | Lower Susquehanna | Susquehanna             | Above     | -   | 3,053.0  | 9,917.4   | -             | 1,201.0  | 3,886.2  | -         | -       | -       | 4,254.0  |
| 90      | Junleta           | Susquehanna             | Above     | -   | 0.1      | 1.3       | -             | 0.0      | 0.4      | -         | -       | -       | 0.1      |
| 100     | Junleta           | Susquehanna             | Above     | -   | 1,160.7  | 4,658.1   | -             | 445.0    | 1,765.5  | -         | -       | -       | 1,605.7  |
| 110     | Lower Susquehanna | Susquehanna             | Above     | 622.1   | 5,828.6  | 17,973.5  | 228.2         | 2,073.1  | 6,333.1  | -         | -       | -       | 7,901.7  |
| 120     | Conowrigo         | Susquehanna             | Above     | -   | 212.7    | 586.7     | -             | 70.6     | 192.5    | -         | -       | -       | 283.3    |
| 140     | Conowrigo         | Susquehanna             | Above     | -   | 0.6      | 8.2       | -             | 0.2      | 2.8      | -         | -       | -       | 0.8      |
| 150     | Upper Potomac     | Potomac                 | Above     | -   | 809.8    | 3,492.5   | -             | 395.3    | 1,539.4  | -         | -       | -       | 1,305.0  |
| 170     | Upper Potomac     | Potomac                 | Above     | -   | -        | -         | -             | -        | -        | -         | -       | -       | -        |
| 175     | Upper Potomac     | Potomac                 | Above     | -   | -        | -         | -             | -        | -        | -         | -       | -       | -        |
| 190     | Mid Potomac       | Potomac                 | Above     | -   | 503.1    | 2,058.5   | -             | 143.7    | 582.0    | -         | -       | -       | 646.8    |
| 190     | Shenandoah        | Potomac                 | Above     | -   | 2,087.7  | 6,830.0   | -             | 794.5    | 2,567.4  | -         | -       | -       | 2,832.2  |
| 200     | Shenandoah        | Potomac                 | Above     | -   | 172.4    | 949.6     | -             | 63.6     | 347.3    | -         | -       | -       | 235.9    |
| 210     | Lower Potomac     | Potomac                 | Above     | -   | 2,647.0  | 8,795.0   | -             | 959.6    | 3,109.5  | -         | -       | -       | 3,606.6  |
| 220     | Lower Potomac     | Potomac                 | Above     | 12.5  | 6,591.4  | 21,014.7  | 4.9           | 2,319.0  | 7,279.6  | -         | -       | -       | 9,140.5  |
| 230     | Rappahannock      | Rappahannock            | Above     | -   | 1,009.5  | 2,786.9   | -             | 319.8    | 877.0    | -         | 230.1   | 774.7   | 1,329.2  |
| 235     | Mattaponi         | York                    | Above     | -   | 62.9     | 368.3     | -             | 19.0     | 110.2    | -         | -       | -       | 81.9     |
| 240     | Mattaponi         | York                    | Above     | -   | -        | -         | -             | -        | -        | -         | -       | -       | -        |
| 250     | Pamunkey          | York                    | Above     | -   | 3.9      | 48.4      | -             | 1.2      | 14.1     | -         | -       | -       | 5.1      |
| 260     | Pamunkey          | York                    | Above     | -   | 30.2     | 183.6     | -             | 10.5     | 63.7     | -         | -       | -       | 40.7     |
| 265     | James             | James                   | Above     | -   | -        | -         | -             | -        | -        | -         | -       | -       | -        |
| 270     | James             | James                   | Above     | -   | 345.4    | 1,331.9   | -             | 157.1    | 598.9    | -         | -       | -       | 502.5    |
| 280     | James             | James                   | Above     | -   | 3,062.2  | 9,510.9   | -             | 984.9    | 2,962.1  | -         | -       | -       | 4,027.2  |
| 290     | James             | James                   | Above     | -   | 261.7    | 1,027.2   | -             | 54.3     | 211.6    | -         | -       | -       | 316.0    |
| 300     | Appomattox        | Appomattox              | Above     | -   | 174.7    | 598.4     | -             | 46.9     | 174.1    | -         | -       | -       | 221.6    |
| 310     | Appomattox        | Appomattox              | Above     | -   | -        | -         | -             | -        | -        | -         | -       | -       | -        |
| 330     | Patuxent          | Patuxent                | Above     | -   | 275.9    | 911.9     | -             | 100.2    | 329.0    | -         | -       | -       | 376.1    |
| 340     | Patuxent          | Patuxent                | Above     | -   | 1,921.9  | 6,093.4   | -             | 660.6    | 2,081.4  | -         | -       | -       | 2,582.6  |
| 370     | Bohemia           | Upper Eastern Shore     | Below     | -   | -        | -         | -             | -        | -        | -         | -       | -       | -        |
| 380     | Chester           | Upper Eastern Shore     | Below     | -   | 99.5     | 332.2     | -             | 27.7     | 91.4     | -         | 4.0     | 13.2    | 131.2    |
| 390     | Wye               | Upper Eastern Shore     | Below     | -   | -        | -         | -             | -        | -        | -         | -       | -       | -        |
| 400     | Lower Choptank    | Upper Eastern Shore     | Below     | -   | 166.3    | 710.0     | -             | 54.0     | 227.1    | -         | 12.3    | 61.5    | 232.6    |
| 410     | Lower Nanticoke   | Lower Eastern Shore     | Below     | -   | 658.9    | 1,721.1   | -             | 224.0    | 570.5    | -         | 0.8     | 5.1     | 883.7    |
| 420     | Wicomico          | Lower Eastern Shore     | Below     | -   | 445.9    | 1,211.7   | -             | 138.3    | 378.2    | -         | 79.4    | 183.6   | 663.6    |
| 430     | Pocomoke          | Lower Eastern Shore     | Below     | -   | 47.2     | 261.4     | -             | 18.3     | 99.3     | -         | 5.4     | 41.0    | 71.0     |
| 440     | Coast 4           | Lower Eastern Shore     | Below     | -   | -        | -         | -             | -        | -        | -         | -       | -       | -        |
| 450     | Coast 11          | West Chesapeake         | Below     | -   | 1,134.7  | 4,362.2   | -             | 352.4    | 1,342.7  | -         | 26.0    | 147.1   | 1,513.1  |
| 470     | Gunpowder         | West Chesapeake         | Below     | -   | 2,334.9  | 7,849.0   | -             | 743.3    | 2,471.0  | -         | 1,349.2 | 3,599.9 | 4,427.4  |
| 480     | Baltimore         | West Chesapeake         | Below     | 2,663.1   | 45,508.2 | 125,583.0 | 855.1         | 14,610.1 | 39,798.8 | -         | 569.0   | 1,057.3 | 60,687.3 |
| 490     | Lower Patapsco    | West Chesapeake         | Below     | 328.8   | 8,995.5  | 26,084.3  | 112.3         | 2,774.8  | 7,876.5  | -         | 893.5   | 2,028.9 | 12,463.8 |
| 500     | Patuxent          | Patuxent/Mid Chesapeake | Below     | -   | 2,658.0  | 8,817.2   | -             | 888.9    | 2,928.5  | -         | 330.5   | 1,124.9 | 3,877.4  |
| 510     | Severn            | Patuxent/Mid Chesapeake | Below     | -   | 1,337.3  | 4,202.7   | -             | 350.3    | 1,088.0  | -         | 196.1   | 555.0   | 1,883.7  |

Table 13

Table 13. POUNDS OF NITROGEN LOADED BY HOUSING TYPE AND WASTE DISPOSAL MEANS TO GROUND WATER, SURFACE WATER, AND THE BAY: MODEL SEGMENT SUMMARIES

|         |                   |                         |           | d. POUNDS OF NITROGEN LOADED BY URBAN POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |           |           |               |          |           |           |          |          |           |
|---------|-------------------|-------------------------|-----------|---|-----------|-----------|---------------|----------|-----------|-----------|----------|----------|-----------|
|         |                   |                         |           | GROUND WATER  |           |           | SURFACE WATER |          |           | BAY WATER |          |          |           |
| Mod Seg | Mod Seg Name      | Sub-basin               | Fall Line | MIN   | MEAN      | MAX       | MIN           | MEAN     | MAX       | MIN       | MEAN     | MAX      | TOTAL d   |
| 540     | Anacostia         | Potomac                 | Below     | 216.8   | 16511.0   | 51,811.2  | 58.9          | 5,519.4  | 17,210.6  | .         | 309.8    | 1,154.6  | 22,340.3  |
| 550     | Ocoquan           | Potomac                 | Below     | .   | 2,743.2   | 9,784.9   | .             | 869.0    | 3,078.4   | .         | 23.9     | 922      | 3,638.0   |
| 560     | Rappahannock      | Rappahannock            | Below     | .   | 148.8     | 852.8     | .             | 56.2     | 317.3     | .         | 58.6     | 2834     | 281.6     |
| 580     | Great Wiconico    | Rappahannock            | Below     | .   | .         | .         | .             | .        | .         | .         | .        | .        | .         |
| 590     | York              | Rappahannock            | Below     | .   | 897.9     | 3,490.0   | .             | 337.9    | 1,263.9   | .         | .        | .        | .         |
| 600     | James             | James                   | Below     | 681.6   | 12,445.0  | 38,674.9  | 251.6         | 4,671.2  | 14,663.2  | 84.7      | 501.9    | 1,2192   | 1,566.0   |
| 610     | Chickahominy      | James                   | Below     | .   | 1630.5    | 6,163.0   | .             | 530.3    | 2,004.0   | .         | .        | .        | 17,618.0  |
| 620     | Nansemond         | James                   | Below     | 1,209.5   | 5,689.5   | 12,460.9  | 556.3         | 2,568.1  | 5,569.4   | 104.3     | 439.9    | 9403     | 2,160.8   |
| 630     | Elizabeth         | James                   | Below     | 2.0   | 265.4     | 819.9     | 1.2           | 120.3    | 415.3     | .         | 11.4     | 565      | 8,697.6   |
| 700     | East Branch 1     | Susquehanna             | Above     | .   | .         | .         | .             | .        | .         | .         | .        | .        | 397.1     |
| 710     | Lower Susquehanna | Susquehanna             | Above     | .   | 722.8     | 2,744.8   | .             | 256.2    | 975.1     | .         | .        | .        | .         |
| 720     | Conowingo         | Susquehanna             | Above     | 1,252.3   | 8061.1    | 18,839.0  | 423.2         | 2,627.6  | 6,394.8   | .         | .        | .        | 978.8     |
| 730     | Mid Potomac       | Potomac                 | Above     | .   | 0.8       | 3.9       | .             | 0.2      | 1.2       | .         | .        | .        | 10,688.7  |
| 740     | Mid Potomac       | Potomac                 | Above     | .   | 564.4     | 1,620.3   | .             | 207.9    | 571.7     | .         | .        | .        | 1.0       |
| 750     | Lower Potomac     | Potomac                 | Above     | .   | 2.5       | 31.3      | .             | 0.8      | 10.0      | .         | .        | .        | 772.4     |
| 760     | Upper Patuxent    | West Chesapeake         | Below     | .   | 666.5     | 2,808.9   | .             | 214.3    | 903.8     | .         | .        | .        | 3.3       |
| 770     | Upper Choptank    | Upper Eastern Shore     | Below     | .   | 3.0       | 10.9      | .             | 1.1      | 3.9       | .         | .        | .        | 880.9     |
| 780     | Upper Nanticoke   | Lower Eastern Shore     | Below     | .   | 2.2       | 15.1      | .             | 0.8      | 5.4       | .         | .        | .        | 4.1       |
| 800     | Coast 1a          | Upper Eastern Shore     | Below     | .   | 177.6     | 481.1     | .             | 56.8     | 152.4     | .         | 31.6     | 82.2     | 3.1       |
| 810     | Coast 1b          | Upper Eastern Shore     | Below     | .   | .         | .         | .             | .        | .         | .         | .        | .        | 265.9     |
| 820     | Coast 1c          | Upper Eastern Shore     | Below     | .   | .         | .         | .             | .        | .         | .         | .        | .        | .         |
| 830     | Coast 1d          | Upper Eastern Shore     | Below     | .   | 200.7     | 793.3     | .             | 56.8     | 221.8     | .         | 16.7     | 61.3     | .         |
| 840     | Coast 1e          | Upper Eastern Shore     | Below     | .   | 1.2       | 25.4      | .             | 0.4      | 1.5       | .         | .        | .        | 274.2     |
| 850     | Coast 6a          | West Chesapeake         | Below     | .   | 105.0     | 562.5     | .             | 33.3     | 176.3     | .         | 14.6     | 85.4     | 1.6       |
| 860     | Coast 6b          | West Chesapeake         | Below     | 708.9   | 23,060.7  | 66,089.4  | 238.2         | 7,606.2  | 21,520.6  | .         | 814.3    | 3,230.3  | 152.9     |
| 870     | Coast 6c          | West Chesapeake         | Below     | .   | 753.3     | 2,617.4   | .             | 195.1    | 671.9     | .         | 312.5    | 1,077.0  | 31,501.2  |
| 880     | Coast 5           | Patuxent/Mid Chesapeake | Below     | .   | 1,856.5   | 5,597.9   | .             | 500.3    | 1,661.5   | .         | 1,786.5  | 5,881.3  | 1,261.9   |
| 890     | Potomac 1         | Potomac                 | Below     | 335.5   | 15,058.9  | 44,727.5  | 122.3         | 5,340.0  | 15,668.2  | 283.8     | 1,200.4  | 2,441.1  | 3,943.4   |
| 900     | Potomac 2         | Potomac                 | Below     | 537.1   | 14,860.5  | 41,917.3  | 163.3         | 4,508.3  | 12,721.2  | .         | 138.5    | 455.4    | 21,599.4  |
| 910     | Potomac 3         | Potomac                 | Below     | 160.5   | 9,970.0   | 30,050.4  | 56.0          | 3,471.3  | 10,375.2  | 46.2      | 502.4    | 1,262.2  | 19,307.3  |
| 920     | Potomac 4         | Potomac                 | Below     | .   | 1,100.8   | 3,955.9   | .             | 394.9    | 1,401.0   | .         | .        | .        | 13,943.8  |
| 930     | Coast 8a          | Rappahannock            | Below     | .   | .         | .         | .             | .        | .         | .         | .        | .        | 1,495.8   |
| 940     | Coast 8b          | Rappahannock            | Below     | .   | 38.1      | 183.2     | .             | 13.8     | 71.0      | .         | 2.7      | 26.3     | .         |
| 950     | Coast 8c          | Rappahannock            | Below     | .   | 2,292.9   | 7,064.5   | .             | 1,327.0  | 4,024.4   | .         | 67.9     | 310.5    | 54.6      |
| 960     | Coast 9           | James                   | Below     | 94.7  | 10,202.9  | 33,777.6  | 53.6          | 5,357.3  | 17,511.9  | .         | 1,195.6  | 3,802.0  | 3,687.8   |
| 970     | Potomac 5         | Potomac                 | Below     | .   | 126.5     | 597.7     | .             | 40.4     | 194.6     | .         | 21.3     | 86.7     | 16,755.8  |
| 980     | Potomac 6         | Potomac                 | Below     | .   | 222.1     | 970.2     | .             | 75.8     | 328.4     | .         | 38.0     | 195.5    | 188.2     |
| 990     | Coast 12          | Patuxent/Mid Chesapeake | Below     | .   | .         | .         | .             | .        | .         | .         | .        | .        | 335.9     |
| (1)     | CHESAPEAKE BAY    | .                       | .         | .   | .         | .         | .             | 19.2     | 78.2      | .         | 593.4    | 1,914.7  | 612.7     |
| (2)     | JAMES RIVER       | .                       | .         | .   | .         | .         | 0.3           | 14.0     | 51.4      | 219       | 1969     | 559.3    | 210.9     |
| (3)     | PATUXENT RIVER    | .                       | .         | .   | .         | .         | .             | .        | .         | .         | 233      | 77.3     | 23.3      |
| (4)     | POTOMAC RIVER     | .                       | .         | .   | .         | .         | .             | 0.3      | 1.1       | 300       | 3537     | 1,016.3  | 354.0     |
| (5)     | RAPPAHANNOCK      | .                       | .         | .   | .         | .         | .             | .        | .         | .         | 83       | 41.2     | 8.3       |
| (6)     | YORK RIVER        | .                       | .         | .   | .         | .         | .             | .        | .         | .         | 759      | 263.6    | 76.9      |
| TOTAL   |                   |                         |           | 9,259.2   | 233,308.0 | 706,064.0 | 3,327.6       | 82,837.4 | 248,336.9 | 5730      | 12,564.5 | 38,198.1 | 329,309.9 |

**Table 13. POUNDS OF NITROGEN LOADED BY HOUSING TYPE AND WASTE DISPOSAL MEANS TO GROUND WATER, SURFACE WATER, AND THE BAY: MODEL SEGMENT SUMMARIES**

|         |                   |                         |           | e. POUNDS OF NITROGEN LOADED BY RURAL POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |          |           |               |          |          |           |         |         | TOTAL <sup>e</sup> |
|---------|-------------------|-------------------------|-----------|---|----------|-----------|---------------|----------|----------|-----------|---------|---------|--------------------|
|         |                   |                         |           | GROUND WATER  |          |           | SURFACE WATER |          |          | BAY WATER |         |         |                    |
| Mod Seg | Mod Seg Name      | Sub-basin               | Fall Line | MIN   | MEAN     | MAX       | MIN           | MEAN     | MAX      | MIN       | MEAN    | MAX     |                    |
| 10      | East Branch 1     | Susquehanna             | Above     | 2,754.8   | 20,111.0 | 48,531.4  | 1,359.4       | 9,615.8  | 22,784.7 | -         | -       | -       | 29,726.8           |
| 20      | East Branch 1     | Susquehanna             | Above     | 2,982.6   | 29,986.9 | 83,217.7  | 1,499.2       | 14,070.6 | 38,364.6 | -         | -       | -       | 44,057.5           |
| 30      | East Branch 2     | Susquehanna             | Above     | 5,776.8   | 20,509.8 | 42,228.8  | 2,984.2       | 10,635.4 | 21,710.1 | -         | -       | -       | 31,145.2           |
| 40      | East Branch 2     | Susquehanna             | Above     | 1,881.3   | 16,361.0 | 40,113.5  | 820.7         | 7,001.7  | 17,103.9 | -         | -       | -       | 23,362.7           |
| 50      | West Branch       | Susquehanna             | Above     | 7,323.6   | 24,121.5 | 47,788.3  | 2,862.8       | 9,214.6  | 18,015.0 | -         | -       | -       | 33,336.1           |
| 60      | West Branch       | Susquehanna             | Above     | 8,274.4   | 25,634.4 | 50,381.0  | 3,258.8       | 10,181.2 | 19,760.4 | -         | -       | -       | 36,015.6           |
| 70      | West Branch       | Susquehanna             | Above     | 1,251.0   | 10,197.6 | 23,254.7  | 518.1         | 4,164.5  | 9,352.5  | -         | -       | -       | 14,362.1           |
| 80      | Lower Susquehanna | Susquehanna             | Above     | 10,081.4  | 34,259.9 | 71,303.8  | 4,140.4       | 13,350.7 | 27,147.0 | -         | -       | -       | 47,810.7           |
| 90      | Juniata           | Susquehanna             | Above     | 765.8   | 6,238.3  | 14,097.4  | 296.8         | 2,374.3  | 5,314.0  | -         | -       | -       | 8,612.6            |
| 100     | Juniata           | Susquehanna             | Above     | 5,279.2   | 25,919.8 | 57,796.2  | 2,183.1       | 10,487.8 | 23,046.2 | -         | -       | -       | 36,407.6           |
| 110     | Lower Susquehanna | Susquehanna             | Above     | 2,423.2   | 31,825.6 | 82,068.4  | 843.7         | 10,926.4 | 27,675.4 | -         | -       | -       | 42,752.2           |
| 120     | Conowingo         | Susquehanna             | Above     | 357.3   | 5,670.8  | 13,882.4  | 122.4         | 1,875.9  | 4,543.0  | -         | -       | -       | 7,548.7            |
| 140     | Conowingo         | Susquehanna             | Above     | 1,455.5   | 8,895.4  | 19,624.7  | 520.4         | 3,097.5  | 6,735.4  | -         | -       | -       | 11,893.0           |
| 160     | Upper Potomac     | Potomac                 | Above     | 630.8   | 9,473.1  | 25,150.9  | 259.4         | 3,913.0  | 10,321.6 | -         | -       | -       | 13,386.1           |
| 170     | Upper Potomac     | Potomac                 | Above     | 4,030.2   | 14,611.4 | 28,649.4  | 1,678.6       | 6,811.1  | 13,243.2 | -         | -       | -       | 21,422.5           |
| 175     | Upper Potomac     | Potomac                 | Above     | 2,615.1   | 12,850.8 | 26,574.8  | 1,242.4       | 6,032.5  | 12,313.3 | -         | -       | -       | 18,883.3           |
| 180     | Mid Potomac       | Potomac                 | Above     | 518.1   | 11,527.5 | 31,419.8  | 176.4         | 3,473.7  | 9,165.1  | -         | -       | -       | 15,001.3           |
| 190     | Shenandoah        | Potomac                 | Above     | 514.0   | 21,284.7 | 53,818.1  | 216.7         | 8,822.5  | 22,046.8 | -         | -       | -       | 30,107.2           |
| 200     | Shenandoah        | Potomac                 | Above     | 2,388.4   | 25,433.7 | 60,265.1  | 963.2         | 10,015.9 | 23,479.1 | -         | -       | -       | 35,449.6           |
| 210     | Lower Potomac     | Potomac                 | Above     | 1,085.7   | 14,466.1 | 38,586.4  | 322.8         | 4,800.4  | 12,851.6 | -         | -       | -       | 19,266.5           |
| 220     | Lower Potomac     | Potomac                 | Above     | 163.6   | 6,766.3  | 18,780.6  | 61.8          | 2,139.6  | 5,939.5  | -         | -       | -       | 8,905.9            |
| 230     | Rappahannock      | Rappahannock            | Above     | 6,652.9   | 31,184.5 | 63,978.6  | 2,249.6       | 9,962.0  | 20,064.3 | -         | -       | -       | 41,146.5           |
| 235     | Mattaponi         | York                    | Above     | 176.3   | 4,080.4  | 10,261.4  | 54.6          | 1,152.1  | 2,859.6  | -         | -       | -       | 5,232.5            |
| 240     | Mattaponi         | York                    | Above     | 771.6   | 6,381.1  | 14,310.9  | 268.1         | 2,017.0  | 4,427.4  | -         | -       | -       | 8,398.1            |
| 250     | Pamunkey          | York                    | Above     | 988.3   | 6,264.4  | 13,408.7  | 239.5         | 1,573.2  | 3,353.6  | -         | -       | -       | 7,837.6            |
| 260     | Pamunkey          | York                    | Above     | 2,119.7   | 16,875.1 | 37,153.3  | 559.5         | 4,351.3  | 9,515.7  | -         | -       | -       | 21,226.4           |
| 265     | James             | James                   | Above     | 659.2   | 2,328.7  | 4,485.1   | 314.2         | 1,091.2  | 2,080.7  | -         | -       | -       | 3,419.9            |
| 270     | James             | James                   | Above     | 2,810.6   | 24,429.4 | 56,880.9  | 1,198.5       | 10,226.5 | 23,557.4 | -         | -       | -       | 34,655.9           |
| 280     | James             | James                   | Above     | 7,744.3   | 47,445.0 | 102,966.6 | 2,411.8       | 13,842.8 | 29,528.4 | -         | -       | -       | 61,287.8           |
| 290     | James             | James                   | Above     | 1,008.1   | 8,262.3  | 20,548.2  | 259.6         | 2,362.2  | 5,925.9  | -         | -       | -       | 10,624.5           |
| 300     | Appomattox        | Appomattox              | Above     | 1,667.9   | 15,539.3 | 35,040.0  | 502.4         | 4,596.7  | 10,273.1 | -         | -       | -       | 20,136.0           |
| 310     | Appomattox        | Appomattox              | Above     | 136.8   | 1,400.4  | 3,409.2   | 36.2          | 334.1    | 798.2    | -         | -       | -       | 1,734.5            |
| 330     | Patuxent          | Patuxent                | Above     | -   | 1,310.8  | 4,140.1   | -             | 476.3    | 1,492.5  | -         | -       | -       | 1,787.0            |
| 340     | Patuxent          | Patuxent                | Above     | 5.8   | 1,325.6  | 4,622.1   | 2.1           | 461.9    | 1,590.7  | -         | -       | -       | 1,787.6            |
| 370     | Bohemia           | Upper Eastern Shore     | Below     | -   | 251.0    | 719.7     | -             | 72.5     | 205.6    | -         | 43.7    | 126.4   | 367.2              |
| 380     | Chester           | Upper Eastern Shore     | Below     | 116.1   | 4,026.5  | 10,695.6  | 36.9          | 1,239.1  | 3,249.5  | 3.4       | 533.8   | 1,363.8 | 5,799.3            |
| 390     | Wye               | Upper Eastern Shore     | Below     | 0.2   | 745.7    | 2,090.7   | 0.0           | 236.1    | 651.8    | -         | 287.0   | 731.7   | 1,268.8            |
| 400     | Lower Choptank    | Upper Eastern Shore     | Below     | 241.8   | 5,373.2  | 13,650.1  | 81.4          | 1,668.8  | 4,178.2  | 0.1       | 327.1   | 939.0   | 7,369.2            |
| 410     | Lower Nanticoke   | Lower Eastern Shore     | Below     | 565.9   | 9,487.2  | 22,571.4  | 177.4         | 3,040.0  | 7,168.9  | 6.9       | 341.4   | 892.6   | 12,868.5           |
| 420     | Wicomico          | Lower Eastern Shore     | Below     | -   | 2,634.9  | 7,457.7   | -             | 925.7    | 2,619.6  | -         | 206.1   | 538.2   | 3,766.8            |
| 430     | Pocomoke          | Lower Eastern Shore     | Below     | 56.3  | 5,127.2  | 13,679.8  | 24.0          | 2,009.9  | 5,295.1  | 5.6       | 514.5   | 1,688.0 | 7,651.7            |
| 440     | Coast 4           | Lower Eastern Shore     | Below     | 1,551.1   | 10,154.5 | 21,329.5  | 673.6         | 4,118.0  | 8,459.2  | 269.6     | 1,836.7 | 3,772.7 | 16,109.2           |
| 450     | Coast 11          | West Chesapeake         | Below     | 638.5   | 14,994.1 | 40,678.4  | 212.8         | 4,924.9  | 13,163.8 | -         | 201.0   | 883.5   | 20,120.0           |
| 470     | Gunpowder         | West Chesapeake         | Below     | 74.5  | 6,481.3  | 19,108.3  | 27.7          | 2,270.7  | 6,630.1  | -         | 20.5    | 71.2    | 8,752.5            |
| 480     | Baltimore         | West Chesapeake         | Below     | -   | 591.3    | 1,871.1   | -             | 202.5    | 633.8    | -         | -       | -       | 793.9              |
| 490     | Lower Patapsco    | West Chesapeake         | Below     | -   | 447.5    | 1,567.8   | -             | 143.8    | 493.1    | -         | 52.9    | 267.8   | 644.2              |
| 500     | Patuxent          | Patuxent/Mid Chesapeake | Below     | 835.2   | 9,442.1  | 23,222.4  | 308.2         | 3,392.9  | 8,227.8  | 112.9     | 1,210.3 | 3,068.6 | 14,045.3           |
| 510     | Severn            | Patuxent/Mid Chesapeake | Below     | -   | 533.3    | 1,765.0   | -             | 150.9    | 495.2    | -         | 153.0   | 500.0   | 837.2              |

Table 13

**Table 13. POUNDS OF NITROGEN LOADED BY HOUSING TYPE AND WASTE DISPOSAL MEANS TO GROUND WATER, SURFACE WATER, AND THE BAY: MODEL SEGMENT SUMMARIES**

|              |                   |                         |           | e. POUNDS OF NITROGEN LOADED BY RURAL POPULATIONS USING OTHER MEANS OF DISPOSAL TO: |                  |                    |                 |                  |                  |                |                 |                 | TOTAL e            |
|--------------|-------------------|-------------------------|-----------|---|------------------|--------------------|-----------------|------------------|------------------|----------------|-----------------|-----------------|--------------------|
|              |                   |                         |           | GROUND WATER  |                  |                    | SURFACE WATER   |                  |                  | BAY WATER      |                 |                 |                    |
| Mod Seg      | Mod Seg Name      | Sub-basin               | Fall Line | MIN   | MEAN             | MAX                | MIN             | MEAN             | MAX              | MIN            | MEAN            | MAX             |                    |
| 540          | Anacostia         | Potomac                 | Below     | -   | 18.0             | 51.6               | -               | 6.3              | 17.9             | -              | -               | -               | 24.3               |
| 550          | Ocoquan           | Potomac                 | Below     | 357.6   | 8685.0           | 23,384.7           | 139.1           | 2,995.7          | 7,882.9          | -              | 21.4            | 64.4            | 11,702.2           |
| 560          | Rappahannock      | Rappahannock            | Below     | 1,630.4   | 14866.7          | 34,052.3           | 589.2           | 5,350.8          | 12,172.5         | 109.2          | 2,184.2         | 5,759.1         | 22,401.6           |
| 580          | Great Wicomico    | Rappahannock            | Below     | 6.6   | 934.4            | 2,334.7            | 2.4             | 329.8            | 821.6            | 6.5            | 511.7           | 1,395.8         | 1,775.8            |
| 590          | York              | Rappahannock            | Below     | 1,906.8   | 11940.0          | 26,822.8           | 685.8           | 4,216.8          | 9,361.2          | 193.9          | 949.2           | 2,167.4         | 17,106.0           |
| 600          | James             | James                   | Below     | 1,074.7   | 11913.8          | 32,089.2           | 439.6           | 4,508.7          | 11,724.6         | 136.1          | 1,309.1         | 3,250.4         | 17,731.7           |
| 610          | Chickahominy      | James                   | Below     | 175.0   | 3641.2           | 9,617.6            | 68.7            | 1,309.4          | 3,389.3          | -              | -               | -               | 4,650.8            |
| 620          | Nassimond         | James                   | Below     | 23.2  | 1575.6           | 3,904.8            | 9.5             | 651.7            | 1,595.9          | -              | 26.4            | 43.8            | 2,253.8            |
| 630          | Elkabeth          | James                   | Below     | -   | 0.7              | 2.2                | -               | 0.4              | 1.2              | -              | -               | -               | 1.1                |
| 700          | East Branch 1     | Susquehanna             | Above     | 590.7   | 1985.2           | 3,883.7            | 299.3           | 979.6            | 1,892.1          | -              | -               | -               | 2,964.8            |
| 710          | Lower Susquehanna | Susquehanna             | Above     | 216.7   | 5626.6           | 15,199.7           | 81.8            | 1,993.0          | 5,283.0          | -              | -               | -               | 7,619.6            |
| 720          | Conowingo         | Susquehanna             | Above     | 645.1   | 11953.0          | 30,330.7           | 207.3           | 3,862.1          | 9,722.6          | -              | -               | -               | 15,815.1           |
| 730          | Mt Potomac        | Potomac                 | Above     | 1,426.4   | 6867.0           | 16,435.4           | 639.5           | 2,728.4          | 6,292.2          | -              | -               | -               | 9,593.4            |
| 740          | Mt Potomac        | Potomac                 | Above     | 2,062.3   | 26923.2          | 65,442.3           | 810.2           | 9,741.6          | 23,297.4         | -              | -               | -               | 36,664.8           |
| 750          | Lower Potomac     | Potomac                 | Above     | 351.3   | 2709.8           | 6,688.4            | 114.8           | 851.2            | 2,065.6          | -              | -               | -               | 3,561.0            |
| 760          | Upper Patuxent    | West Chesapeake         | Below     | 21.9  | 6856.5           | 20,192.9           | 7.8             | 2,513.1          | 7,293.1          | -              | -               | -               | 9,369.6            |
| 770          | Upper Choptank    | Upper Eastern Shore     | Below     | 116.6   | 1508.6           | 3,809.0            | 42.1            | 536.0            | 1,339.9          | -              | -               | -               | 2,044.6            |
| 780          | Upper Nanticoke   | Lower Eastern Shore     | Below     | -   | 430.7            | 1,254.2            | -               | 136.6            | 393.6            | -              | -               | -               | 567.3              |
| 800          | Coast 1a          | Upper Eastern Shore     | Below     | 25.8  | 1394.9           | 3,430.8            | 8.3             | 443.8            | 1,079.8          | -              | 140.6           | 317.2           | 1,979.3            |
| 810          | Coast 1b          | Upper Eastern Shore     | Below     | 5.8   | 1627.1           | 4,771.3            | 1.6             | 503.4            | 1,460.5          | -              | 467.2           | 1,395.4         | 2,597.7            |
| 820          | Coast 1c          | Upper Eastern Shore     | Below     | -   | 650.2            | 1,840.2            | -               | 221.5            | 624.8            | -              | 676.7           | 2,391.0         | 1,748.4            |
| 830          | Coast 1d          | Upper Eastern Shore     | Below     | -   | 660.9            | 2,500.8            | -               | 213.5            | 799.2            | -              | 535.3           | 2,174.5         | 1,409.8            |
| 840          | Coast 1e          | Upper Eastern Shore     | Below     | 164.7   | 2882.4           | 6,836.3            | 95.2            | 1,192.2          | 2,765.5          | 149.7          | 1,183.9         | 2,727.6         | 5,258.4            |
| 850          | Coast 6a          | West Chesapeake         | Below     | 62.5  | 970.6            | 2,487.2            | 21.4            | 323.2            | 817.0            | 15.1           | 186.6           | 443.0           | 1,482.4            |
| 860          | Coast 6b          | West Chesapeake         | Below     | -   | 125.9            | 410.1              | -               | 41.6             | 134.1            | -              | 86.8            | 296.8           | 254.4              |
| 870          | Coast 6c          | West Chesapeake         | Below     | -   | 136.1            | 527.8              | -               | 43.9             | 168.6            | -              | 54.8            | 244.3           | 236.8              |
| 880          | Coast 5           | Patuxent/Mid Chesapeake | Below     | 307.2   | 3,333.5          | 8,954.5            | 109.1           | 1,165.0          | 3,067.1          | -              | 328.3           | 1,068.5         | 4,826.7            |
| 890          | Potomac 1         | Potomac                 | Below     | -   | 0.2              | 1.1                | -               | 0.1              | 0.4              | -              | 1.6             | 7.5             | 2.0                |
| 900          | Potomac 2         | Potomac                 | Below     | -   | 102.8            | 401.7              | -               | 35.8             | 137.6            | -              | 58.6            | 245.3           | 197.2              |
| 910          | Potomac 3         | Potomac                 | Below     | 67.3  | 3,261.4          | 9,060.8            | 23.8            | 1,233.1          | 3,403.2          | 14.9           | 175.8           | 448.2           | 4,670.3            |
| 920          | Potomac 4         | Potomac                 | Below     | 3,774.6   | 19,812.3         | 43,224.0           | 1,409.3         | 7,218.3          | 15,538.6         | 351.9          | 2,180.9         | 5,310.7         | 29,211.6           |
| 930          | Coast 8a          | Rappahannock            | Below     | 0.1   | 743.4            | 2,012.9            | 0.0             | 313.2            | 837.5            | -              | 597.1           | 1,612.0         | 1,653.7            |
| 940          | Coast 8b          | Rappahannock            | Below     | 709.2   | 6,521.3          | 15,009.4           | 301.4           | 2,791.3          | 6,363.3          | 175.6          | 1,796.8         | 4,318.0         | 11,109.4           |
| 950          | Coast 8c          | Rappahannock            | Below     | -   | 366.5            | 1,035.7            | -               | 199.6            | 555.6            | -              | 120.2           | 345.9           | 686.4              |
| 960          | Coast 9           | James                   | Below     | -   | 4.0              | 15.9               | -               | 2.2              | 8.6              | -              | -               | -               | 6.2                |
| 970          | Potomac 5         | Potomac                 | Below     | -   | 549.3            | 1,736.8            | -               | 155.9            | 490.6            | -              | 58.3            | 240.0           | 763.5              |
| 980          | Potomac 6         | Potomac                 | Below     | 1,121.3   | 9,865.6          | 24,741.5           | 435.4           | 3,544.7          | 8,755.3          | 241.5          | 1,735.8         | 4,319.9         | 15,146.1           |
| 990          | Coast 12          | Patuxent/Mid Chesapeake | Below     | -   | 348.1            | 865.8              | -               | 119.9            | 294.9            | -              | 170.9           | 416.5           | 638.9              |
| (1)          | CHESAPEAKE BAY    |                         |           | -   | 5.4              | 28.3               | 4.3             | 51.6             | 136.0            | 73.6           | 1,613.8         | 4,415.5         | 1,670.9            |
| (2)          | JAMES RIVER       |                         |           | -   | -                | -                  | 0.1             | 9.9              | 29.4             | 17.0           | 149.7           | 380.0           | 159.5              |
| (3)          | PATUXENT RIVER    |                         |           | -   | -                | -                  | -               | -                | -                | 12.0           | 120.0           | 282.8           | 120.0              |
| (4)          | POTOMAC RIVER     |                         |           | -   | -                | -                  | 0.1             | 3.5              | 9.4              | 51.5           | 465.1           | 1,232.2         | 468.5              |
| (5)          | RAPPAHANNOCK      |                         |           | -   | -                | -                  | -               | 15.7             | 52.6             | 11.1           | 257.9           | 706.5           | 273.5              |
| (6)          | YORK RIVER        |                         |           | -   | -                | -                  | -               | -                | -                | 44.1           | 190.0           | 423.4           | 190.0              |
| <b>TOTAL</b> |                   |                         |           | <b>108,217.6</b>  | <b>785,243.0</b> | <b>1,854,532.9</b> | <b>42,716.0</b> | <b>292,400.2</b> | <b>660,168.2</b> | <b>2,002.3</b> | <b>24,284.8</b> | <b>63,767.4</b> | <b>1,101,928.1</b> |

**Table 13. POUNDS OF NITROGEN LOADED BY HOUSING TYPE AND WASTE DISPOSAL MEANS TO GROUND WATER, SURFACE WATER, AND THE BAY: MODEL SEGMENT SUMMARIES**

| Mod Seg | Mod Seg Name      | Sub-basin               | Fall Line | I. NITROGEN LOADINGS FROM FARM POPULATIONS USING OTHER MEANS OF WASTE DISPOSAL TO: |         |          |               |         |         |           |       |       |         |                    |
|---------|-------------------|-------------------------|-----------|--|---------|----------|---------------|---------|---------|-----------|-------|-------|---------|--------------------|
|         |                   |                         |           | GROUNDWATER  |         |          | SURFACE WATER |         |         | BAY WATER |       |       | TOTAL I | MEAN TOTAL N (LBS) |
|         |                   |                         |           | MIN  | MEAN    | MAX      | MIN           | MEAN    | MAX     | MIN       | MEAN  | MAX   |         |                    |
| 10      | East Branch 1     | Susquehanna             | Above     | -  | 3,003.9 | 12,202.8 | -             | 1,443.0 | 5,754.0 | -         | -     | -     | 4,446.9 | 1,022,866.2        |
| 20      | East Branch 1     | Susquehanna             | Above     | -  | 2,628.1 | 15,298.2 | -             | 1,229.0 | 7,024.4 | -         | -     | -     | 3,858.1 | 2,238,690.7        |
| 30      | East Branch 2     | Susquehanna             | Above     | -  | 738.7   | 3,162.3  | -             | 374.3   | 1,598.0 | -         | -     | -     | 1,113.0 | 921,283.0          |
| 40      | East Branch 2     | Susquehanna             | Above     | -  | 322.8   | 1,934.2  | -             | 120.1   | 714.7   | -         | -     | -     | 442.9   | 921,283.0          |
| 50      | West Branch       | Susquehanna             | Above     | -  | 228.9   | 1,143.8  | -             | 90.3    | 438.3   | -         | -     | -     | 320.3   | 508,902.9          |
| 60      | West Branch       | Susquehanna             | Above     | -  | 965.9   | 4,189.4  | -             | 400.4   | 1,724.1 | -         | -     | -     | 1,366.3 | 683,379.4          |
| 70      | West Branch       | Susquehanna             | Above     | 21.6   | 921.7   | 3,647.4  | 8.4           | 344.3   | 1,457.2 | -         | -     | -     | 1,266.0 | 586,456.8          |
| 80      | Lower Susquehanna | Susquehanna             | Above     | 753.4  | 4,381.5 | 11,454.6 | 307.1         | 1,738.6 | 4,440.4 | -         | -     | -     | 6,100.1 | 1,304,091.7        |
| 90      | Juniata           | Susquehanna             | Above     | -  | 261.9   | 1,567.1  | -             | 100.9   | 596.4   | -         | -     | -     | 382.9   | 325,810.4          |
| 100     | Juniata           | Susquehanna             | Above     | 166.7  | 4,054.2 | 11,794.4 | 63.6          | 1,552.9 | 4,534.4 | -         | -     | -     | 5,607.2 | 974,025.8          |
| 110     | Lower Susquehanna | Susquehanna             | Above     | -  | 1,445.1 | 7,048.2  | -             | 510.0   | 2,457.0 | -         | -     | -     | 1,955.1 | 1,938,237.9        |
| 120     | Conowingo         | Susquehanna             | Above     | 10.8   | 1,139.3 | 4,414.0  | 3.8           | 373.4   | 1,433.3 | -         | -     | -     | 1,512.7 | 310,103.4          |
| 140     | Conowingo         | Susquehanna             | Above     | -  | 426.1   | 2,061.3  | -             | 151.6   | 724.0   | -         | -     | -     | 577.8   | 270,486.2          |
| 160     | Upper Potomac     | Potomac                 | Above     | -  | 503.9   | 2,704.8  | -             | 198.9   | 1,064.6 | -         | -     | -     | 702.8   | 329,066.9          |
| 170     | Upper Potomac     | Potomac                 | Above     | -  | 1,925.7 | 6,587.4  | -             | 683.6   | 3,006.3 | -         | -     | -     | 2,809.2 | 178,948.6          |
| 175     | Upper Potomac     | Potomac                 | Above     | -  | 1,104.0 | 4,503.5  | -             | 519.0   | 2,097.0 | -         | -     | -     | 1,623.0 | 209,148.4          |
| 180     | Mid Potomac       | Potomac                 | Above     | -  | 988.9   | 4,484.1  | -             | 310.4   | 1,376.1 | -         | -     | -     | 1,299.3 | 547,218.7          |
| 190     | Shenandoah        | Potomac                 | Above     | -  | 1,556.2 | 8,698.1  | -             | 623.5   | 3,469.3 | -         | -     | -     | 2,179.7 | 741,246.6          |
| 200     | Shenandoah        | Potomac                 | Above     | -  | 1,341.4 | 7,451.3  | -             | 531.7   | 2,877.7 | -         | -     | -     | 1,873.1 | 608,790.1          |
| 210     | Lower Potomac     | Potomac                 | Above     | -  | 54.8    | 282.5    | -             | 15.7    | 80.6    | -         | -     | -     | 70.5    | 768,145.9          |
| 220     | Lower Potomac     | Potomac                 | Above     | -  | 274.1   | 1,799.3  | -             | 68.2    | 466.8   | -         | -     | -     | 342.3   | 717,796.2          |
| 230     | Rappahannock      | Rappahannock            | Above     | -  | 1,639.7 | 8,068.8  | -             | 524.2   | 2,529.9 | -         | -     | -     | 2,164.0 | 599,499.1          |
| 235     | Mittaponi         | York                    | Above     | -  | 50.3    | 609.7    | -             | 14.3    | 169.3   | -         | -     | -     | 64.6    | 133,502.3          |
| 240     | Mittaponi         | York                    | Above     | -  | 120.8   | 724.1    | -             | 39.4    | 227.8   | -         | -     | -     | 160.2   | 104,189.1          |
| 250     | Panunkey          | York                    | Above     | -  | 275.1   | 1,534.5  | -             | 69.6    | 386.6   | -         | -     | -     | 344.7   | 107,000.9          |
| 260     | Panunkey          | York                    | Above     | -  | 447.1   | 2,577.1  | -             | 98.8    | 571.3   | -         | -     | -     | 546.0   | 278,267.6          |
| 265     | James             | James                   | Above     | -  | 177.3   | 674.2    | -             | 81.8    | 308.0   | -         | -     | -     | 259.1   | 16,950.5           |
| 270     | James             | James                   | Above     | -  | 1,278.8 | 5,621.8  | -             | 530.4   | 2,260.0 | -         | -     | -     | 1,809.1 | 439,038.1          |
| 280     | James             | James                   | Above     | -  | 2,209.5 | 11,902.1 | -             | 626.5   | 3,356.1 | -         | -     | -     | 2,836.0 | 1,188,595.6        |
| 290     | James             | James                   | Above     | -  | 104.0   | 402.8    | -             | 22.7    | 88.3    | -         | -     | -     | 126.7   | 236,942.6          |
| 300     | Appomattox        | Appomattox              | Above     | -  | 1,110.5 | 5,621.7  | -             | 322.8   | 1,610.8 | -         | -     | -     | 1,433.2 | 291,880.1          |
| 310     | Appomattox        | Appomattox              | Above     | -  | 102.5   | 484.0    | -             | 23.6    | 108.5   | -         | -     | -     | 126.2   | 47,021.4           |
| 330     | Patuxent          | Patuxent                | Above     | -  | -       | -        | -             | -       | -       | -         | -     | -     | -       | 171,466.5          |
| 340     | Patuxent          | Patuxent                | Above     | -  | -       | -        | -             | -       | -       | -         | -     | -     | -       | 184,562.3          |
| 370     | Bohemian          | Upper Eastern Shore     | Below     | -  | 4.1     | 62.5     | -             | 1.3     | 17.8    | -         | -     | -     | 6.3     | 24,944.0           |
| 380     | Chester           | Upper Eastern Shore     | Below     | -  | 168.3   | 1,221.3  | -             | 52.3    | 372.5   | -         | 0.6   | 9.5   | 232.8   | 158,698.9          |
| 390     | Wye               | Upper Eastern Shore     | Below     | -  | 10.0    | 146.4    | -             | 3.2     | 45.6    | -         | 12.2  | 115.7 | 15.1    | 38,981.4           |
| 400     | Lower Choptank    | Upper Eastern Shore     | Below     | -  | 253.6   | 1,760.8  | -             | 76.9    | 532.1   | -         | 1.9   | 33.1  | 354.2   | 203,017.7          |
| 410     | Lower Nanticoke   | Lower Eastern Shore     | Below     | -  | 1,182.7 | 5,101.2  | -             | 378.7   | 1,618.2 | -         | 23.7  | 150.9 | 1,584.6 | 408,492.9          |
| 420     | Wicomico          | Lower Eastern Shore     | Below     | -  | 228.9   | 1,101.5  | -             | 78.8    | 376.8   | -         | 23.2  | 135.7 | 323.5   | 249,897.1          |
| 430     | Pocomoke          | Lower Eastern Shore     | Below     | -  | 841.4   | 3,911.0  | -             | 323.2   | 1,487.8 | -         | 15.8  | 75.6  | 1,189.2 | 228,718.2          |
| 440     | Coast 4           | Lower Eastern Shore     | Below     | -  | 848.9   | 3,824.9  | -             | 332.8   | 1,480.3 | -         | 24.6  | 163.5 | 1,387.9 | 180,345.1          |
| 450     | Coast 11          | West Chesapeake         | Below     | 19.9   | 955.4   | 3,679.8  | 6.9           | 332.7   | 1,253.7 | -         | 208.1 | 830.3 | 1,288.1 | 1,020,478.6        |
| 470     | Gunpowder         | West Chesapeake         | Below     | -  | 8.6     | 65.4     | -             | 3.4     | 24.4    | -         | 0.1   | 2.8   | 12.2    | 711,179.2          |
| 480     | Baltimore         | West Chesapeake         | Below     | -  | -       | -        | -             | -       | -       | -         | -     | -     | -       | 202,125.3          |
| 490     | Lower Patapsco    | West Chesapeake         | Below     | -  | -       | -        | -             | -       | -       | -         | -     | -     | -       | 253,330.3          |
| 500     | Patuxent          | Patuxent/Mid Chesapeake | Below     | 0.1  | 1,072.7 | 4,128.0  | 0.0           | 388.2   | 1,470.9 | -         | 120.5 | 486.3 | 1,581.4 | 636,520.4          |
| 510     | Severn            | Patuxent/Mid Chesapeake | Below     | -  | 4.0     | 55.3     | -             | 1.1     | 14.7    | -         | 1.3   | 17.7  | 6.4     | 187,668.3          |

Table 13

**Table 13. POUNDS OF NITROGEN LOADED BY HOUSING TYPE AND WASTE DISPOSAL MEANS TO GROUND WATER, SURFACE WATER, AND THE BAY: MODEL SEGMENT SUMMARIES**

| Mod Seg      | Mod Seg Name      | Sub-basin               | Fall Line | I. NITROGEN LOADINGS FROM FARM POPULATIONS USING OTHER MEANS OF WASTE DISPOSAL TO: |                 |                  |               |                 |                 |          |                |                | TOTAL †         | MEAN TOTAL N (LBS)  |
|--------------|-------------------|-------------------------|-----------|--|-----------------|------------------|---------------|-----------------|-----------------|----------|----------------|----------------|-----------------|---------------------|
|              |                   |                         |           | GROUND WATER   |                 |                  | SURFACE WATER |                 |                 | BAYWATER |                |                |                 |                     |
|              |                   |                         |           | MIN  | MEAN            | MAX              | MIN           | MEAN            | MAX             | MIN      | MEAN           | MAX            |                 |                     |
| 540          | Anacostia         | Potomac                 | Below     | -  | -               | -                | -             | -               | -               | -        | -              | -              | -               | 100,477.9           |
| 550          | Ocoquan           | Potomac                 | Below     | -  | 171.6           | 1,545.3          | -             | 60.0            | 529.3           | -        | -              | -              | -               | 631,556.1           |
| 560          | Rappahannock      | Rappahannock            | Below     | -  | 1,402.8         | 5,784.3          | -             | 504.3           | 2,052.7         | -        | 168.9          | 797.3          | 2,076.0         | 352,765.0           |
| 580          | Great Wicomico    | Rappahannock            | Below     | -  | 81.3            | 390.4            | -             | 27.9            | 133.7           | -        | 8.2            | 60.9           | 117.5           | 26,763.7            |
| 590          | York              | Rappahannock            | Below     | -  | 855.0           | 2,959.5          | -             | 301.3           | 1,036.6         | -        | 55.5           | 190.5          | 1,211.7         | 482,598.9           |
| 500          | James             | James                   | Below     | -  | 154.4           | 1,085.8          | -             | 58.0            | 405.2           | -        | 8.9            | 68.3           | 221.3           | 878,880.4           |
| 510          | Chickahominy      | James                   | Below     | -  | -               | -                | -             | -               | -               | -        | -              | -              | -               | 262,119.4           |
| 520          | Nansenond         | James                   | Below     | -  | 203.2           | 971.1            | -             | 83.7            | 395.6           | -        | 1.8            | 9.3            | 298.7           | 175,709.4           |
| 530          | Elizabeth         | James                   | Below     | -  | 0.2             | 0.9              | -             | 0.1             | 0.5             | -        | -              | -              | 0.2             | 20,227.6            |
| 700          | East Branch 1     | Susquehanna             | Above     | -  | 122.0           | 553.0            | -             | 59.0            | 268.6           | -        | -              | -              | 181.0           | 76,912.4            |
| 710          | Lower Susquehanna | Susquehanna             | Above     | -  | 538.7           | 2,618.2          | -             | 184.1           | 889.8           | -        | -              | -              | 722.8           | 332,291.5           |
| 720          | Conowingo         | Susquehanna             | Above     | 329.7  | 5,156.1         | 14,345.4         | 104.7         | 1,841.7         | 4,534.6         | -        | -              | -              | 6,797.8         | 689,480.2           |
| 730          | Mid Potomac       | Potomac                 | Above     | -  | 600.6           | 2,721.4          | -             | 238.2           | 1,037.1         | -        | -              | -              | 838.8           | 294,853.5           |
| 740          | Mid Potomac       | Potomac                 | Above     | -  | 1,189.9         | 6,954.9          | -             | 408.0           | 2,409.3         | -        | -              | -              | 1,577.8         | 870,945.5           |
| 750          | Lower Potomac     | Potomac                 | Above     | -  | 150.5           | 903.1            | -             | 47.4            | 278.5           | -        | -              | -              | 197.8           | 117,644.4           |
| 760          | Upper Patapsco    | West Chesapeake         | Below     | -  | -               | -                | -             | -               | -               | -        | -              | -              | -               | 541,300.2           |
| 770          | Upper Choptank    | Upper Eastern Shore     | Below     | -  | 113.2           | 691.9            | -             | 40.2            | 243.4           | -        | -              | -              | 153.5           | 83,646.7            |
| 780          | Upper Nanticoke   | Lower Eastern Shore     | Below     | -  | 85.7            | 425.1            | -             | 27.6            | 135.1           | -        | -              | -              | 113.3           | 34,546.6            |
| 900          | Coast 'a          | Upper Eastern Shore     | Below     | -  | 10.1            | 131.5            | -             | 3.2             | 41.3            | -        | 1.2            | 12.5           | 14.5            | 90,632.4            |
| 910          | Coast 'b          | Upper Eastern Shore     | Below     | -  | 36.3            | 406.1            | -             | 10.8            | 121.0           | -        | 6.2            | 84.5           | 53.3            | 55,313.9            |
| 920          | Coast 'c          | Upper Eastern Shore     | Below     | -  | 0.9             | 36.6             | -             | 0.3             | 12.8            | -        | 0.8            | 38.0           | 2.0             | 87,361.8            |
| 930          | Coast 'd          | Upper Eastern Shore     | Below     | -  | 10.2            | 200.2            | -             | 3.3             | 64.3            | -        | 9.3            | 191.5          | 22.7            | 88,836.9            |
| 940          | Coast 'e          | Upper Eastern Shore     | Below     | -  | 170.7           | 958.1            | -             | 61.0            | 346.2           | -        | 10.4           | 97.2           | 242.1           | 66,092.8            |
| 950          | Coast 'f          | West Chesapeake         | Below     | -  | -               | -                | -             | -               | -               | -        | -              | -              | -               | 26,975.5            |
| 960          | Coast 'g          | West Chesapeake         | Below     | -  | -               | -                | -             | -               | -               | -        | -              | -              | -               | 87,777.6            |
| 970          | Coast 'h          | West Chesapeake         | Below     | -  | -               | -                | -             | -               | -               | -        | -              | -              | -               | 220,669.8           |
| 980          | Coast 'i          | Patuxent/Mid Chesapeake | Below     | -  | 455.9           | 1,790.6          | -             | 160.3           | 622.3           | -        | 31.6           | 180.8          | 647.9           | 356,322.9           |
| 990          | Potomac 1         | Potomac                 | Below     | -  | 0.0             | 0.2              | -             | 0.0             | 0.1             | -        | 0.0            | 1.0            | 0.1             | 62,409.1            |
| 900          | Potomac 2         | Potomac                 | Below     | -  | -               | -                | -             | -               | -               | -        | -              | -              | -               | 136,940.4           |
| 910          | Potomac 3         | Potomac                 | Below     | -  | 30.1            | 242.0            | -             | 10.7            | 84.8            | -        | 1.6            | 17.2           | 42.4            | 199,199.9           |
| 920          | Potomac 4         | Potomac                 | Below     | 69.4   | 3,694.3         | 10,959.6         | 24.9          | 1,342.6         | 3,929.9         | -        | 182.5          | 1,155.0        | 5,319.4         | 551,303.8           |
| 930          | Coast 'a          | Rappahannock            | Below     | -  | 77.3            | 335.3            | -             | 32.4            | 137.4           | -        | 56.4           | 242.0          | 166.0           | 30,318.1            |
| 940          | Coast 'b          | Rappahannock            | Below     | -  | 419.9           | 1,925.5          | -             | 161.2           | 753.8           | -        | 33.8           | 207.3          | 614.9           | 228,908.5           |
| 950          | Coast 'c          | Rappahannock            | Below     | -  | 17.5            | 121.6            | -             | 9.6             | 66.3            | -        | -              | -              | 27.1            | 129,163.3           |
| 960          | Coast 'd          | James                   | Below     | -  | 3.3             | 11.8             | -             | 1.8             | 6.5             | -        | -              | -              | 5.2             | 207,300.3           |
| 970          | Potomac 5         | Potomac                 | Below     | -  | 0.7             | 16.9             | -             | 0.2             | 5.5             | -        | 0.8            | 19.8           | 1.8             | 34,696.7            |
| 980          | Potomac 6         | Potomac                 | Below     | -  | 861.6           | 3,220.9          | -             | 357.6           | 1,261.7         | -        | 306.1          | 993.8          | 1,525.3         | 343,569.8           |
| 990          | Coast '2          | Patuxent/Mid Chesapeake | Below     | -  | 84.8            | 311.6            | -             | 30.4            | 108.8           | -        | 42.3           | 164.0          | 157.5           | 167,016.6           |
| (1)          | CHESAPEAKE BAY    |                         |           | -  | -               | 0.1              | -             | 2.2             | 9.8             | -        | 76.4           | 419.4          | 78.6            | 73,796.6            |
| (2)          | JAMES RIVER       |                         |           | -  | -               | -                | -             | 0.1             | 0.7             | -        | 0.8            | 5.9            | 0.9             | 8,986.4             |
| (3)          | PATUXENT RIVER    |                         |           | -  | -               | -                | -             | -               | -               | -        | 13.1           | 51.2           | 13.1            | 4,936.0             |
| (4)          | POTOMAC RIVER     |                         |           | -  | -               | -                | -             | 0.5             | 2.2             | -        | 64.6           | 240.1          | 65.1            | 12,043.0            |
| (5)          | RAPPAHANNOCK      |                         |           | -  | -               | -                | -             | -               | -               | -        | 18.5           | 69.3           | 16.5            | 5,242.1             |
| (6)          | YORK RIVER        |                         |           | -  | -               | -                | -             | -               | -               | -        | 7.2            | 23.7           | 7.2             | 9,017.9             |
| <b>TOTAL</b> |                   |                         |           | <b>1,371.6</b>   | <b>58,022.6</b> | <b>242,524.2</b> | <b>519.3</b>  | <b>11,776.5</b> | <b>89,566.9</b> | <b>-</b> | <b>1,634.7</b> | <b>7,361.5</b> | <b>81,433.9</b> | <b>33,473,566.8</b> |

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Table 13

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**Compilation Of Literature On  
Individual Onsite Wastewater Treatment Systems And  
Methods To Estimate Their Nitrogen Loading To  
Surface And Ground Waters**

National Center for Resource Innovations-Chesapeake  
Janice Wiles, Consultant  
July, 1995

This document was prepared as part of the National Center for Resource Innovations (NCRI) - Chesapeake's project: The Potential for Nutrient Loadings from Septic Systems to Ground and Surface Water Resources and the Chesapeake Bay. It is intended to offer contacts and relevant information for NCRI-Chesapeake to use in the development of a model to estimate nitrate loading to ground and surface water in the Chesapeake Bay Watershed.

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### ***Attachments:***

Questionnaire

Contact List

Memorandum from J. Hearn, Water Management Administration of Maryland Department of the Environment on Alternative Onsite Sewage Disposal Systems, Sept 28, 1994

Baltimore Metropolitan Council-Reservoir Technical Group Focus on Septic System Issues

Alternative and Innovative Septic Systems

## INTERVIEW NOTES

Telephone interviews were conducted with the majority of the following people. A questionnaire was developed (see Appendix I) to assist with these interviews. All of the professionals that were contacted are listed in Appendix II.

### Entire Chesapeake Bay Watershed and Outside

1. *Ross Mandel*, Interstate Commission for the Potomac River Basin, Rockville, MD - Prior to working for the Commission Mandel was a graduate student at Cornell under D. Haith and co-authored *The Impact of Septic Systems on Surface Water Quality* (see Section III for document description).

Mandel thinks that more focus should be placed on modeling failing systems, and consideration of denitrification. With regard to denitrification and septic systems he referenced Metcalf & Eddy (their study of denitrification rates), J.A. Cherry, and Reneau (research on shallow systems).

2. *Jim Kaap*, SCS Water Quality Specialist, Madison, Wisconsin - He sent document on using NLEAP to model nitrate loading.
3. *Hans Zarbock*, Coastal Environmental, Florida - He is working on the final draft for Charlotte Harbor, Florida. In their estimation they used a 2,000 ft maximum zone of impact for sandy soils. This was based on empirical data collected by well sampling for Mike Heyl's project to determine retention and sorption.

The project had a detailed survey of the number of septic tanks. They used 2.3 people/household and data on per capita water use and were able to estimate hydraulic load. They found the effluent quality below the drain field to be 39ppm N and 11 ppm P. They used a linear decay equation from a block centroid to the shoreline and found 80% N removal and 95% P removal irrespective of location (w/in 2,000 ft maximum zone of impact). From both Charlotte Harbor studies and Tampa Bay studies the septic tank loading of N is about 2-3% of all N loading.

See document sent from Gerold Morrison: "Charlotte Harbor Watershed Diagnostic Assessment".

Zarbock recommended that we contact Tony Janicki of Coastal Environmental Services (410) 684-3324. CES has done GIS work in the Chesapeake Bay.

4. *Dave Tamasco*, Florida National Estuarine Program - Florida National Environmental Program developed a water budget, split the difference between high and low NO<sub>3</sub> loading estimates, estimated there is a 20-40% loss of N from drainfield to groundwater table; looked at loading using Ostendorf (default) decay rate and found the plume diffuses; there is not enough organic matter to fuel denitrification. Organic matter as low as 1% might help denitrify NO<sub>3</sub>.

They found in some cases that 11% of stream flow is septic tank effluent. They put the decay rate with horizontal transport rate to find delivery rates for the sub-basin. They found that off one creek 30% of the effluent flow is from septic tanks. Yet the plume of septic diffuses in the sandy soils so that there is not high reading of NO<sub>3</sub> at any one point.

The National Environmental Program took a different approach and looked at bacterial and viral counts and their inputs correlate directly with septic tank concentration.

See paper.

5. *Ed Eicher*, Cape Cod Commission - The regulations for onsite wastewater management systems on Cape Cod are based on N loading models. See literature in Section III.
6. *Doug Haith*, Cornell University - The GWLF models stream flow, sediment yield and N & P loading. There must be data on the numbers and types of systems. County health departments in NY state have been quite forthcoming with such data. Haith is not convinced that maintenance is a factor in such a loading estimate.
7. *Scott Stevens*, South Florida Water Management District, Tampa Bay, National Estuary Program - Steven's questions reliability of census data for septic tanks. For the Tampa Bay he used a GIS layer of census tract data on septic tanks and put it over sub basins and land use in the St. Pete area where he knew there were 2,000 septic tanks. He compared with census data and found that the census data overestimated the number by 32% - so in their model they decreased the number of septic tanks by 32% for the entire bay region.

The SFWMD-Tampa Bay eliminated land uses (in GIS) where septic tanks couldn't be put and then calculated the distance from centroid to stream or hydro feature. They used the distribution of distances to make a linear regression to determine distance.

8. *Mike Sevenser*, Washington Suburban Sanitary Commission (WSSC) - Sevenser is doing a literature review on septic systems and their impacts. He is concerned with Montgomery and Prince Georges county; and will share data and literature with us.

## Pennsylvania

1. *Milton Lauch*, Pennsylvania Department of Environment - The Pa DER tried to estimate loadings several years ago; they assumed 45ppm N at base of adsorption area, and used census data to estimate the number of septic systems. M. Lauch thought that the data they used were not good enough to determine loading accurately.

PA DER proposed regulations for septic tank maintenance, which were not passed. However, the state recently gave out some money to counties to enforce and encourage maintenance.

## Maryland

1. *Deborah Weller*, Maryland Office of Planning - The Planning Office used the Hydrologic Loading Planning Function Model with census data and loading coefficients (33, 53, and 67) in the Patuxent, actual and literature watershed-level (no plot study) data and estimate that model determined N & P loading are within 5% of actual loading. Weller said that transport is "built into" the loading coefficients used. They were using natural soil groups yet will begin using STATSGO soon. (Dawn DiStefano in MD Office of Planning is developing their GIS data base.) The Patuxent River Demonstration Project Workgroup is EPA-supported. The work group is looking into: how to improve their N & P load estimation, ways to reduce loading, the regulations and potential use of alternative systems (see Jay Prager, MD Department of the Environment). The work group is concerned with rural clustering.

The Washington Suburban Sanitary Commission has supplied the Patuxent River Project with data (see Mike Sevenser, WSSC).

2. *Jane Gottfredson/Jay Prager*, Maryland Department of the Environment, Residential Sanitation Division, Septic and Wells Program - When working for the National Association of Home builders J. Gottfredson helped develop a mass-balance model for N loading from septic systems.

Alternative systems are being used and looked at more so now in the state of Maryland. There has been a surge in their use since 1988 and 89 due to increased technical assistance and funding for their development and improvement. Jay Prager explained that alternative systems fall within prescribed criteria and are newly constructed on existing land (see Appendix II). Innovative systems are described as those put in where there is a failing septic system, where there is some literature on the system to rely upon, and where a homeowner is aware of the risks and helps to monitor the system's hydraulic performance. In Anne Arundel County there were 100-150 recirculating sand filter systems installed. Sand mounds are used conventionally in permeable soils.

Maryland has no mandate for septic system maintenance. MDE works to educate homeowners and Prager believes that children will be key to educating families and adult septic system users to the importance of regular maintenance. J. Prager is trying to get a video produced for school and rural library use.

There are many old (20-30 years) systems in Maryland. MDE believes that systems don't fail when newer than 20 years old. MDE is very strict about site condition compliance prior to installation of septic system. To install a conventional system the percolation rate must be 30 min/inch and there must be a soil test to learn soil texture and landscape position. Many counties believe that deeper systems are better; Prager believes that septic systems are installed too deeply.

All of the eastern shore counties - with the exception of Kent - have assessed groundwater and have found reduced treatment zones.

3. *Jack Anderson*, Baltimore Metropolitan Council - Jack held a special session with the BMC to discuss septic system issues. The minutes are forthcoming. The flier announcing the special session is attached to this document (see Appendix III).
4. *Robert, Shedlock*, U.S.G.S., Towson, MD - Dr. Shedlock co-authored the NAWQA study on the Delmarva. He is currently trying to track septic effluent with the MD DNR. Joel Dysart (410) 512-4837 is working most closely (under Shedlock) on the geochemical signatures project.

#### Delaware

1. *Judy Denver*, U.S.G.S., Dover - Dr. Denver participated in the NAWQA study of the Delmarva Peninsula. She is using chlorofluorocarbon dating to determine groundwater flux in the Delmarva. They are now seeing 20 year old ground water entering the Bay. She estimates 7# N/person/yr as input to septic system and of this amount 64% is lost to ground water and the rest volatilizes to atmosphere.
2. *Blair Venables*, Delaware State Department of Natural Resources, Dover - Venables helped to install the septic systems around Red Mill Pond, where field studies of nitrate loading were done.
3. *Ian Cofman*, Delaware State Department of Natural Resources, Dover - Cofman measured nutrient gradients and has some data on N down and up gradients.

4. *Dr. William Ritter*, University of Delaware, Dover - Has done estimates of N loading for Nanicoke Project.
5. *Rodney Wyatt*, Section Manager, Ground Water Discharge Unit, Water Resources division, DNR, Delaware - Wyatt is in charge of issuing state septic system permits. The 1985 Delaware regulations are based on soils. The DNR is looking at the effectiveness of alternative systems.

Currently their system for recording septic system licensing and location is manual. The DNR (attn Wyatt) entered into an agreement with Xerox to use email and computers to eliminate administrative burden and improve compliance, and to evaluate emerging technologies and maintenance. (There is a state technology fund of \$20 million that DNR is trying to get support from). They will use groundwater data and will require a 1-3 year maintenance pump.

(NCRI has sent information to Wyatt on CBDSS and expects to receive regulations and literature on alternative septic systems in use and under study in Delaware).

#### West Virginia

1. *Phil Jones*, West Virginia Department of Environment - Jones works on regulations and design. West Virginia currently has no ongoing testing/maintenance program for septic tanks. Counties have kept ledgers on permitting since July 1, 1970, and those should be available for Jefferson, Morgan and Berkeley counties. There are no maintenance requirements, yet the DE does give out a brochure on septic tank maintenance. Shallow systems are required - with 30" maximum trench.

*Phil Jones* referred me to *Dave Watkins*, Department of Environmental Protection (304) 558-2108. Watkins deals with larger systems designed for 20+ people.

#### Virginia

1. *Kathy Baird*, Department of Environmental Health, Chesterfield County, Virginia - Chesterfield County has established a low cost inspection system that complies with Coastal Zone Management Plan for the region. The County has developed a software package in Fox Pro which helps track compliance by noting date, location depth, drainage, and pumping regularity. There is 35% compliance; when they sent out questionnaires regarding the program (before it was implemented) they got a greater than 50% response. Many repairs are done without health departments permit; people might be reluctant to get a permit because the health department might find that costly repairs and perhaps drain fields are necessary. Chesterfield County has recently hired a media specialist to remind the public about upkeep on their systems.

Other people to talk to: 1) *Robert Bowers* (804) 748-1692; he is an inspector who wants to redesign the program 2) *Dr. William Nelson*, Director of Health Department (804) 748-1743 to give history of program.

2. *Alan Knapp*, VA Department of Health - Mr. Knapp works on VA regulations. Drainfield loading maximum is 1200 gal/day acre, which has encouraged spreading them out. There is no regulation for septic tank depth, decisions are based on soil type.

3. *Daryl Glover, Shawn Smith, Chesapeake Bay Local Assistance Department (CBLAD) - The Chesapeake Bay Preservation Act (of 1989-90) established requirements to impose an ordinance for 5 year clean out for all counties east of I-95 (those in CBW) modeled after the state law. The problems found thus far are that haulers don't notify government when they are done, and there is no place to put the pump-out material.*
4. *Virginia Water Project, Blacksburg, VA*
5. *Robert Croonenberts, Director, Division Shellfish Sanitation, VA Department of Health -*  
 He used a com-puter model to decide if DEQ should allow discharge from sewage that might affect shellfish. They have constructed some wetlands, and have collected water quality data. VA is using a lot of recirculating sand filter systems.  
 Croonenberts works with Roger Cooley (a technical staff person) who might be a good person to contact for more information.
6. *Raymond Reneau, Virginia Polytechnic Institute and State College, Department of Crop and Soil Environmental Sciences - Dr. Reneau has done a lot of field research on septic systems and in 1991 co-authored a report for the Virginia Department of Health: Potential for Contamination of Ground and Surface Waters from On-Site Wastewater Disposal Systems. He has a lot of data and would be an excellent resource and reviewer.*

#### **Published Literature**

The following articles were selected because of aspects which are pertinent to calculation of N loading from septic systems in the CBW and to provide an idea of the types of studies done on septic systems. This literature list is not intended to be a complete compilation of literature about septic systems. There is a large reference list in the unpublished document by Stolt and Reneau Potential for Contamination of Ground and Surface Waters from On-site Wastewater Disposal Systems. There are also a series of books which might be useful references during the model-development process. Copies of these are not provided. References for these books are given in this list.

*American Society of Agricultural Engineers.* 1984 (see also 1989 and 1994). On-site wastewater treatment. ASAE Proceedings.

*Bauman, B.J. and W.M. Schafer.* Estimating Ground-Water Quality Impacts from On-Site Sewage Treatment Systems. This article presents a model to analyze and examine ground-water pollution potential from septic systems. See Table 2 (pg 293) for internal and external factors to consider when evaluating the impact of septic systems on ground-water quality. The model does not attempt to accurately predict ground-water nitrate levels. The model developers attempted to create a simplified model that help decision-makers, unfamiliar with modeling, understand the natural system and mechanics of interaction among components. The authors point out that cumulative impact and density of septic systems and dilution capacity of ground-water should be considered.

*Brown, K.W. and J.C. Thomas.* Nov-Dec 1978, Uptake of N by Grass from Septic Fields in Three Soils. *Agronomy Journal*, Vol 70, pp 1037-1040. The study was done to determine the capacity of vegetation for removal of N from soil around septic systems. Results show that the largest fraction was taken up from soil which received the least amount of effluent. This study was done to provide data on how much N might be sequestered by vegetation growing over a septic field.

*Canter, Larry* 1987. Ground water quality protection. Lewis Publisher.

- Canter, Larry* 1985. Ground water pollution control. Lewis Publisher.
- Canter, Larry* 1985. Septic tank system effects on ground water quality. Lewis Publisher.
- Clayton, J.W.* Dec 1972. An analysis of septic tank survival data in Fairfax County, Virginia for 1952-1972. Presented at the 24th Annual National Water Well Association Convention in Atlanta Georgia. Data from 1952-72 on septic tanks were analyzed. The author found that septic tanks systems which were "properly designed and installed under fairly well controlled conditions were surviving ... [for up to] 20-30 years". This success is credited to careful evaluation of soils; the Fairfax County Health Department doesn't rely on the percolation test. They determine if soil is conducive to absorption and infiltration and where there won't be a high water table during the wet season. Then, a perc test is run but only to guide design of the absorption system size.
- Cogger, C.G. and B.L. Carlile.* 1984 Field Performance of Conventional and Alternative Septic Systems in Wet Soils.. *Journal of Environmental Quality*, Vol 13, no 1 pp 137-142. This was a field evaluation of 15 septic systems, including alternative systems: four low pressure pipe (LPP) systems, two soil replacement systems, and two pressure-dosed mounds. Researchers looked for all spp of nitrogen, P, and fecal coliform in ground water, and measured water tables monthly. Contaminant levels decreased with distance from source. Lateral transport was greatest on a steep groundwater gradient which is continuously saturated. The LPP alternative on acceptable soil and site conditions improved treatment whereas soil replacement systems did not. One mound failed due to abuse.
- D'Itri, Frank.* 1988 Rural groundwater contamination. Lewis Publisher.
- Dunkle, SA, LN Plummer, E. Busenberg, PJ Phillips, JM Denver, PA Hamilton, RI Michel, TB Copen,* Dec 1993 Chlorofluorocarbons as Dating Tools and Hydrologic Tracers in Shallow Groundwater of the Delmarva Peninsula, Atlantic Coastal Plain, US, *Water Resources Research*, Vol 29, No 12 pg 3837-3860, (sent by R. Shedlock)
- Finnemore, E.J.* Nov-Dec 1993. Estimation of Ground-Water Mounding Beneath Septic Drain Fields. *Ground Water* Vol 31 No 6 pp 884-889.
- Finnemore, E.J.* Jan-Feb 1995. A Program to Calculate Ground-Water Mound Heights. *Ground Water* Vol 33 No 1 pp 139-143. The article presents the program MOUNDHT - a computer program used to calculate mound height. The resulting mound ht values are compared with values in Hantush's tables and hand calculation using an approximation equation (see Table 1 pg 142). Copies of MOUNDHT for use on an IBM PC or compatible computer may be obtained from the author at nominal cost. (contact: E. John Finnemore, Dept of Civil Engineering, Santa Clara University, Santa Clara, CA 95053)
- Ford, K. L., J.H. Schott, T.J. Keefe.* Nov-Dec 1980. Mountain Residential Development Minimum Well Protective Distances Well Water Quality. *Journal of Environmental Health*, V. 43 (3) 130-133. This paper evaluated factors which may contribute to nitrate pollution of well water from onsite sewage systems, and to evaluate the criteria used for a system's construction. The study was done in a mountainous area of Colorado where geologic factors (important in understanding ground-water contamination potential) are difficult to understand. High levels of contamination in mountainous region shows that there may be significant limitations to unsewered residential development.
- Gold, A.J., W. R. DeRagon, W.M. Sullivan, J.L. Lemunyon,* March-April 1990, Nitrate-nitrogen losses to groundwater from rural and suburban land uses, *Journal of Soil and Water Conservation*, p 305-310 (sent by G. Loomis).

*Gold, A.J. BE Lamb, GW Loomis, JR Boyd, VJ Cabelli, CG McKiel.* Oct-Dec 1992, Wastewater Renovation in Buried and Recirculating Sand Filters, *Journal of Environmental Quality*, Vol 21, no 4, pp 720-725 (sent by G. Loomis)

*Haith, D.A., M. ASCE, L.J. Tubbs.* Feb 1981 Watershed Loading Functions for Nonpoint Sources. *Journal of the Environmental Engineering Division, Proceedings of the American Society of Civil Engineers*, Vol 107 no EE1.

*Haith, D.A. and L.L. Shoemaker.* June 1987. Generalized Watershed Loading Functions for Stream Flow Nutrients. *Water Resources Bulletin* Vol 23, No 3 pp 471-478.

*Lamb, BE, AJ Gold, GW Loomis, CG McKiel,* 1990, Nitrogen Removal for On-Site Sewage Disposal: A recirculating Sand Filter/Rock Tank Design, *ASAE* Vol 33, no 2, pp 525-531, (sent by G. Loomis).

*Lamb, BE, AJ Gold, GW Loomis, CG McKiel,* 1991 Nitrogen Removal for On-Site Sewage Disposal: Field Evaluation of Buried Sand Filter/Greywater Systems, *ASAE* Vol 34, no 3, pp 883-889, (sent by G. Loomis).

*Magette, W.L., R.A. Weismiller.* 1987-88. Septic Tank-Soil Absorption Systems. *Water Resources, Cooperative Extension Service, University of Maryland System No 24.* This publication describes the structure, function and maintenance requirements of an onsite individual wastewater treatment system.

*Murphy, Eileen A.* 1992. Nitrate in drinking water wells in Burlington and Mercer Counties, New Jersey. *Journal of Soil and Water Conservation* 47 (2), pp 183-187. An analysis of nitrate levels in drinking water wells in two regions (one in aquifer system of Atlantic Coastal Plain and another in aquifer systems of Coastal Plain and glacial till). Distance of well from septic tank and depth of well are studied.

*Perkins, R. J.* Septic Tanks, Lot Size and Pollution of Water Table Aquifers. *Journal of Environmental Health*, V 46 (6) 298-304. This paper looks at the issues involved in permitting and regulating septic system use (setbacks, lot size). Four models are looked at for predicting nitrate concentrations. See generalizations on page 302.

*Perkins, Richard.* 1989. Onsite wastewater disposal. Lewis Publisher.

*Postma, FB, AJ Gold, GW Loomis.* Sept-Oct 1992, Nutrient and Microbial Movement from Seasonally-Used Septic Systems *Journal of Environmental Health*, pp 5-10 (sent by G. Loomis).

*Reneau, R.B, Jr.* 1977. Changes in Inorganic Nitrogenous Compounds from Septic Tank Effluent in a Soil with a Fluctuating Water Table. *Journal of Environmental Quality*, Vol 6 no 2 pp 173-178. This study monitors changes in N species from effluent in Virginia Coastal Plain soil where there are seasonally high water tables, and sandy soils underlain by a less permeable layer. (facilitating horizontal flow and recharge). See Table 2 for correlation between distance from absorption field of septic system and concentration of species of N in soil.

*Robertson, F.N.* July-Aug 1979. Evaluation of Nitrate in the Ground Water in the Delaware Coastal Plain. *Ground Water* Vol 17 no 4 pp 328-337. This study was done to examine ground-water quality and possibly determine the source of any ground-water source in peril. The occurrence of nitrate was closely linked to land use, soil permeability, depth to water table and the geochemistry of the aquifer. Most of the 19 problem areas were found in well-drained Evesboro soil series with depths to water table > 10 feet. (and distances where oxidizing is more likely to occur). Lower nitrate values were found in woodlands and

poorly-drained soils with water table depths from 0-5 feet (and where denitrification is more likely to occur).

*Robertson, W.D. and J.A. Cherry.* Jan-Feb 1995. In Situ Denitrification of Septic-System Nitrate using Reactive Porous Media Barriers: Field Trials. *Ground Water* Vol 33 No 1 pp 99-111. This paper studies two design options for denitrification using organic carbon (saw-dust). Four field trials are discussed using the two designs: one as a horizontal barrier, the other as a vertical barrier for nitrates. Both barriers showed 60-100% success at attenuating nitrate levels of up to 125 mg/l N over the course of 1 year. Sand filters (a commonly used alternative) have shown a 40-90% attenuation.

*Robertson, W.D., J.A. Cherry, E.A. Sudicky.* January-February 1991. Ground-Water Contamination from Two Small Septic Systems on Sand Aquifers. *Groundwater* Vol 29 No 1 pp 82-92.

*Shedlock R, P. Hamilton, J. Denver, P Phillips,* 1993, Multiscale Approach to Regional Ground-Water-Quality Assessment of the Delmarva Peninsula (reprinted from *Regional Ground-Water Quality*, ed by William Alley, USGS), (sent by R. Shedlock, USGS, Towson, MD)

*Simmons, RC, AJ Gold, PM Groffman,* Oct-Dec 1992, Nitrate Dynamics in Riparian Forests: *Groundwater Studies, Journal of Environmental Quality*, Vol 21, no 4, pp 659-665 (sent by A. Gold).

*Small Flows.* Winter 1995 Gloucester first to construct onsite project alternatives Vol 9 No 1. *National Small Flows Clearinghouse.* This and attached *Small Flows* contain other articles on the National Onsite Demonstration Project (NODP). There are two project sites within the Chesapeake Bay Watershed: Anne Arundel County and Dorchester County, Maryland.

*Stewart, L.W. and R.B. Reneau, Jr.* 1988. Shallowly Placed, Low Pressure Distribution System to Treat Domestic Wastewater in Soils with Fluctuating High Water Tables *Journal of Environmental Quality*, Vol 17 no 3 pp 499-504. Putting an OSWDS in a biologically active soil horizon and above an unsaturated zone should help reduce P and bacterial movement. However nitrate is not so easily removed or changed. This study shows that a low Pressure distribution system could be effective at promoting denitrification and decreasing nitrates in ground water in soil with high seasonal flux in water table. Denitrification could be fueled by soil OM, carbon from grass over the OSWDS and carbon in the effluent.

*Waldorf, Lawrence.* 1982. Individual onsite wastewater systems. National Sanitation Foundation.

*Walker, W.G., J. Bouma, D.R. Keeney, F.R. Magdoff.* 1973 Nitrogen Transformations During Subsurface Disposal of Septic Tank Effluent in Sands: I Soil Transformations. *Journal of Environmental Quality*, Vol 2 no 4. pp 475-480. This study looks at the physical and chemical properties of soils in five septic tank seepage beds to find out what happens to effluent N. This study might provide some background material.

*Walker, W.G., J. Bouma, D.R. Keeney, P.G. Olcott* 1973. Nitrogen Transformations During Subsurface Disposal of Septic Tank Effluent in Sands: II. Ground Water Quality. *Journal of Environmental Quality*, Vol 2 no 4 pp 521-525. The research studies N removal from septic system effluent through use of sand. Data from this study suggest that only increased dilution from uncontaminated ground water is able to lower nitrate content.

*Walker, W.H.* Sept-Oct 1973. Ground-Water Nitrate Pollution in Rural Areas. *Ground Water* Vol 11 No 5 pp 19-22. This article is really focused on nitrates in ground-water from agriculture and animal runoff, with little mention of septic systems. However there are some interesting aspects on nitrate transport, seasonal and vegetative nutrient attenuation which might be useful to this septic system analysis.

Weiskel, P.K. and B.L. Howes 1992 Differential Transport of Sewage-Derived Nitrogen and Phosphorus through a Coastal Watershed. Environmental Science and Technology 26, 352-360. This article follows movement of N and P through a coastal watershed in southeast Massachusetts. (The authors might be of some help during the analysis of loading for the CBW).

Wilhelm, SR, SL Schiff, JA Cherry, Nov-Dec 1994. Biogeochemical Evolution of Domestic Waste Water in Septic Systems: 1. Conceptual Model, Ground Water, Vol 32 no 6 pp 905-916.

#### Unpublished Technical Documents and Reports

1. Nonpoint Source Assessment and Accounting System, Final Report for FFY'91 Section 319 Grant, Prepared by the Maryland Office of Planning and the Maryland Department of the Environment, September 1993 (sent by Deborah Weller, MD Office of Planning).  
*The assessment includes a baseline inventory which will allow estimation of the nutrient loads from septic systems to surface, subsurface and deeper groundwater flow paths. Pertinent to septic systems the baseline inventory also estimates the effects of forest buffers along waterways. See Section 4.4 (pg 13) for description of Septic System loading estimation method. See Figure 5. See Appendix A Distributions of Loading coefficient Data Compiled from Published and Unpublished Sources.*
2. Patuxent Watershed Demonstration Project: Phase I Interim Guidance Document April 25, 1994 (sent by Deborah Weller, MD Office of Planning) See Figure 6.14 a-g.
3. Impact of Alternative On-Site Wastewater Systems on Ground-Water Quality in Delaware, William F. Ritter, Professor, Agricultural Engineering Department, University of Delaware, Newark, Delaware for Delaware Dept of Natural Resources and Environmental Control, Dover, DE, June 1990 (sent by Dr. W.F. Ritter)  
*Monthly groundwater samples were collected around 8 on-site wastewater systems and tested for ammonia, nitrates, organic nitrogen, chlorides, acidity, conductivity, fecal coliform and fecal streptococcus. The results are presented in this document. Also, discussion of rainfall data, water-table elevations and rainfall quality are provided.*
4. Denitrification and On-Site Wastewater Treatment Systems, by Robert Eastburn and William Ritter for Water Resources Section, Department of Natural Resources and Environmental Control, DE (sent by W.F. Ritter)  
*The documented nitrate contamination in groundwater in Kent and Sussex Counties, Delaware from septic systems spurred revision of septic tank regulations. This paper and literature review looks at biological denitrification and its importance to alternative and conventional on-site wastewater treatment. See Chapter 7 On-Site Wastewater Treatment Systems on pgs 59-68.*
5. Nutrient Budgets for the Inland Bays, by William Ritter for Delaware Department of Natural Resources and Environmental Control (sent by W.F. Ritter)  
*Nitrogen and phosphorus loads were calculated for dry, normal and wet years for Rehoboth Bays, Indian River Bay and Little Assavoman bay and 19 sub basins. On-site wastewater systems contribute approximately 14% of the nitrogen load to the Inland Bays (see Table 33).*

*See page 50 for septic tank loading rate estimate. See page 52 for nitrogen budget calculation for septic tanks.*

6. Nutrient Budgets for the Appoquinimink Watershed by William Ritter and Mary Ann Levan for the Delaware Department of Natural Resources and Environmental Control (sent by W.F. Ritter).

*In this study the unit loading rate method was used to develop N & P budgets from non-point sources. N loading is described on pgs 17 and 18. Assumed no variation in N loading from septic tanks for dry, normal or wet season. See page 40 for discussion of role of ponds in N removal during certain times of the year. On page 46 see discussion of alternative land uses which states "If 50% of the cropland was changed to urban-low density development, the ... nitrogen loads would be increased by approximately 55,600 lb/yr because of septic tank effluent.*

7. Effects of Agricultural Practices and Septic-System Effluent on the Quality of Water in the Unconfined Aquifer in Parts of Eastern Sussex County, Delaware, by Judith M. Denver, Delaware Geological Survey Report of Investigations No 45, June 1989 (sent by Judith Denver).

*The section on pgs 43-47 Comparison of Natural Water Chemistry and Chemistry of Water Affected by Septic-System Effluent and Agricultural Practices seems relevant to this project. They look at nitrate concentrations, specific conductance in water and percentages of major ions in water samples. Section on pg 42 Effects of Septic-System Effluent on Ground-Water Chemistry is a good summary.*

8. Nitrogen Loading, prepared by Eduard Eichner and Thomas Cambareri of the Water Resources Office for the Cape Cod Commission, Technical Bulletin 91-001, April 1992 (sent by Ed Eichner)

*This bulletin presents the methodology used by the Cape Cod Commission Water Resources Office to evaluate cumulative nitrogen loading. The method assumes that 1) recharge and sources of nitrogen are well mixed before entering ground water in the study site; 2) no nitrogen is lost from the system once it enters the ground water. This study recognized the need to study nitrogen sensitive embayments. Page 7 clarifies some of the differences in results based on soil characteristics, percolation rate, loading rate, distance to impervious strata, and distance to water table.*

9. Sampling and Analysis Results for the Period of August 1992 through February 1993: Onsite Wastewater Treatment Utilizing Constructed Wetlands, Suffolk, VA prepared by David D. Effert, Technical Services Chief, Division of Onsite Sewage and Water, Virginia Department of Health, June 25, 1993 (sent by Allen Knapp, Enforcement Chief, Division of Onsite Sewage and Water Services, Department of Health, Main Street Station)

*This study looked at the usefulness of wetlands (constructed for the study) in treating sewage effluent.*

10. Point/Non-Point Source Pollution Loading Assessment, Phase I, Sarasota Bay National Estuary Program, January 10, 1992, Camp Dresser & McKee Inc. (sent by Michael G. Heyl, M.S., Principal Scientist)

*See Section 3 which presents the methods used and assumptions made in estimating pollution loading to Sarasota Bay. The relationship between rainfall and stream flow, and selection of nonpoint pollution loading factors are discussed. See Section 3.5.1 Failing Septic Tanks and*

3.5.2 Working Septic Tanks. Also see Appendix B: Technical memorandum on Septic Tank Literature Review and Analysts.

11. Three Rivers Health District Septage Disposal Study, Final Report to the Chesapeake Bay Local Assistance Department, Dec. 8 1994, prepared by C. Duncan, et al for Department of Crop and Soil Environmental Sciences, VPI (sent by CBLAD)

*This study was designed to study the impact of a once-every-five-years mandatory septic system pump out as mandated by the Chesapeake Bay Local Assistance Department.*

12. An Assessment of Potential Septic System Impacts on Surface Water Reservoirs in the Upper Patuxent River Basin of Montgomery County, MD (DRAFT), presented by Ayres Associates to the Washington Suburban Sanitary Commission, Laurel, MD (sent by Michael A. Sevener, PE of the WSSC)

WSSC via Ayres Assoc. performed a literature survey of potential impacts of septic systems on ground and surface waters. To do this over 200 professional papers were reviewed and investigators in the field of septic systems were contacted. See summary of report's findings on page 2 of Septic Systems Concerns regarding their Impacts on the Patuxent Reservoirs.

*In the "Assessment" see page 17 for estimate of N contribution from wastewater (6-17 gm/cap/day OR .8-13.7 ;bs/cap/yr), and pages 21-2 for fate and transport of N in soils and groundwater.*

*The reference list (see pg 78+) should be reviewed for literature and contacts.*

13. Charlotte Harbor Diagnostic Watershed Assessment, Interim Report - Work Order #3 (DRAFT), prepared by: Coastal Environmental, Inc for the Southwest Florida Water Management District (sent by Gerold Morrison, PhD, SFWMD)

*See Section 4 for loading estimation and model development. This document should be very useful for development of a CBW septic system loading model.*

14. Impact of the Use of Subsurface Disposal System on Ground Water Nitrate Nitrogen Levels (discussion paper), Bureau of Water Quality Management, PA DER (sent by Milton Lauch)

Section III Subsurface Disposal Systems and Nitrate Generation traces loading of nitrate to groundwater. and Section IV discusses Treatment to Reduce Nitrate Nitrogen Concentrations.

If interested in alternative systems see articles listed in Section IV on treatment to reduce nitrate concentrations.

15. NLEAP Application for Developing Municipal Wellhead Protection Strategies in the Central Wisconsin Sand Plain, by JD Kaap et al (sent by Jim Kaap USDA Natural Resources and Conservation Service, Madison, Wisc)

*See page four for explanation of inputs to NLEAP for nitrates from septic systems.*

16. What is the Significance of Nitrogen Loading from Septic Tanks? presented at the Chesapeake Bay Conference by AJ Gold and GW Loomis, Univ. of Rhode Island, April 1994 (sent by Professor Arthur Gold)

Long term studies (with replication) on N removal septic systems need to be done. The Pinelands Commission of New Jersey and the State of Wisconsin (see references) are doing this.

The authors caution against studies that solely rely on groundwater monitoring to assess performance. They say that "plumes are often difficult to locate and N removal estimates are confounded by the effects of dilution and dispersion in the groundwater". They recommend year-round monitoring, and field studies over laboratory.

17. Perspectives in Nonpoint Source Research in the Chesapeake Basin, Scientific and Technical Advisory Committee, CBP, Richmond VA (sent by Arthur Gold)

The agenda and contacts from a meeting held in 1994 by STAC - CBP.

18. Nitrogen Removal during Wastewater Infiltration as Affected by Design and Environmental Factors, Robert L. Siegrist and Peter D. Jenssen, Proceedings from the 6th Northwest On-Site Wastewater Treatment Short Course, Sept 18-19, 1989, University of Washington, Seattle, WA (sent by Art Gold, Univ. of RI)

*This paper reviews soil infiltration systems, the method each has of enhancing removal of nitrogen, and the concepts and experiences with N removal in these systems.*

19. Generalized Watershed Loading Functions (GWLF) User's Manual, (Version 2.0) plus Ground Water Loading Function Model on diskette), Douglas Haith, Ross Mandel and Ray Shyan Wu, Dept of Agricultural and Biological Engineering, Cornell University, Dec 1992 (sent by Doug Haith).

*This manual describes the GWLF model input and output files, structure and options, as well as three examples of its use. Appendices show mathematical design of the model, how the parameters are estimated, validation results and examples of input and output files.*

20. The Impact of Septic Systems on Surface Water Quality by Ross Mandel and Douglas Haith, Department of Civil and Env't Engineering/Department of Agricultural and Biological Engineering, Cornell Univ, Ithaca, NY, Nov 1992 (sent by D. Haith)

*This report explains the use of GWLF model component to estimate nutrient loading from septic systems. See Chapter 3: Modeling the Contribution of Septic Systems to N and P Loads in Surface Water. Conventional and 3 alternative systems are looked at.*

21. Potential for Contamination of Ground and Surface Waters from Onsite Surface Disposal Systems (final report to the Virginia Department of Health) by Mark Stolt and Raymond Reneau of VPI, June 1991 (sent by Dr. Reneau)

*This paper explores both conventional and alternative on-site wastewater disposal systems. The most relevant work is on nitrogen pg 41-75. The reference list is useful.*

22. An Assessment of the Impact of Septic Leach Fields, Home Lawn Fertilizer, and Agricultural Activities on Ground Water Quality by Kirk Brown for The Pinelands Commission, 1980 (report #4, to be sent by Maureen Cook).

*This document describes a mass balance dilution model used to determine lot size sufficient for septic system placement. The diskette is available and referenced as #38.*

23. Controlling Nutrient Pollution from Non-Point Sources in Pennsylvania (final report for Governor Casey's Select Committee on Non-Point Source Nutrient Management) December 20, 1990 (sent by M. Lauch).

*See Pages 11 and 12 for information on septic systems in Pennsylvania.*

24. No-Flow Toilets from the State Regulations, March 1995. National Small Flows Clearinghouse, West Virginia University, P.O. Box 6064, Morgantown, WV.

*A compilation of state regulations on toilets and individual onsite sewage treatment systems. Incomplete for Chesapeake Bay Watershed: there are no state regulations available for Delaware and West Virginia.*

### List of Reviewers

*None of the following people have been asked if they would participate or review documents. However, due to their interest in the subject and their expressed interest in this project, I suspect that most would collaborate.*

Dr. Judy Denver, U.S.G.S., Dover, Delaware

*Dr. Denver is a geochemist with ongoing ground water research projects in the Delmarva. She would be quite helpful, particularly with regard to N loading in the coastal plain.*

Art Gold, Professor, University of Rhode Island, Kingston, RI.

*Dr. Gold has extensive knowledge and research time investigation on-site waste treatment facilities.*

Doug Haith, Professor, Cornell University, Ithaca, NY.

*Dr. Haith has extensive experience with HWLF Model.*

Dr. William Magette, Associate Professor, Agriculture Engineering Department, University of Maryland, College Park, MD.

*Dr. Magette co-authored with Dr. Richard Weismiller (Acting Director; Agronomy Department, Univ. of MD at College Park) a Cooperative Extension Service publication titled Septic Tank-Soil Absorption Systems. Dr. Magette (and Dr. Weismiller) have expertise using GIS and modeling.*

Ross Mandel, Interstate Commission for Potomac River Basin

*Mr. Mandel used GWLF and wrote masters thesis on septic system loading of nutrients to surface water.*

Dr. Raymond Reneau, Jr., Professor, Department of Crop and Soil Environmental Sciences, Virginia Polytechnic Institute and State University, Blacksburg, VA

*Dr. Reneau has done extensive field studies on septic systems and mentioned that he has available data. He would be an excellent technical review person, although he does not work with models.*

Dr. William Ritter, Professor, University of Delaware-Dover

*Dr. Ritter has done important research on nutrient loadings to bay waters, denitrification in septic systems, and on alternative and conventional systems and their impacts on surface and ground water resources.*

**Additional Reviewers Requested by Russ Mader of the Nonpoint Source Subcommittee of the CBPO**

Lewis Linker  
EPA-CBPO  
410 Severn Ave., Suite 109  
Annapolis, MD 21403

Lynn Shuyler  
EPA-CBPO  
410 Severn Ave., Suite 109  
Annapolis, MD 21403

Jim Cox  
VA DCR/DSWC  
Suite 206  
203 Governor Street  
Richmond, VA 23219-2094

Bob Summers  
MDE, Ches. Bay & Watershed Mgmt. Admin.  
2500 Broening Highway  
Baltimore, MD 21224

Gary Peterson  
Environmental Resources Research Institute  
Pennsylvania State University  
104 Land and Water Research Building  
University Park, PA 16802-4900

Milton Lauch  
Bureau of Water Quality Management  
PA DEP  
Market St. State Office Building, 10th Floor  
P.O. Box 8465  
Harrisburg, PA 17105-8465

### **Alternative Systems Review**

Conventional on-site wastewater disposal systems are often unsuitable for use in certain soils, or areas where high water tables occur, where there is slow percolation, shallowness to bedrock, and an impediment to infiltration. Several alternatives have been studied and some used. These were initially reviewed by the US. EPA in 1980, and a discussion of these is included in document #21 of unpublished literature (Potential for Contamination of Ground and Surface Waters from On-Site Wastewater Disposal Systems). The alternative systems discussed are: mounds, low pressure distribution, aerobic units, sand filters, electro-osmosis, evapotranspiration, and spray irrigation.

The Maryland Department of the Environment (Jay Prager) provided a "Menu of Practices to Improve Performance of Septic Systems". MDE provides 19 practices, the purpose of each, its cost and expected N reduction (see Appendix II).

The Washington Suburban Sanitary Commission (WSSC) provided a document on Septic System Best Available Technologies. It gives a description of some of the conventional system components, some modifications to them, and some alternatives to their components.

Many of the literature cited throughout this report has review and investigation of alternative onsite sewage treatment systems.

#### **Inventory of State Regulation Documents**

State regulations for septic tank construction and maintenance are available for New York, Pennsylvania and Delaware. Regulations for Maryland, Virginia and West Virginia are coming. Also for Virginia is a Septic System Ordinance Study and maintenance requirement documents for Chesterfield County and the Chesapeake Bay Preservation Act /Chesapeake Bay Local Assistance Department. There are some educational materials for Maryland, Virginia and Pennsylvania.



## National Center for Resource Innovations

### Questionnaire Regarding Septic Systems in the Chesapeake Bay Watershed

*to be used to gather information for the NCRI Project "Potential for Nutrient Loadings from Septic Systems to Ground and Surface Water Resources and the Chesapeake Bay"*

Have you used any models to help determine nutrient septic loading? If so:

- What was the goal of the model? Is the model descriptive or predictive?
- What are the variables considered?
- Does model consider vulnerable areas like those with karst topography, sandy and ponded soils?
- Does the model account for seasonal variation in rainfall? monthly variation? annual temperature?
- Does model cover specific geographic location for application, or is there an area where it does not apply?
- What assumptions were made?
- What are the parameters for the variables?
- Has the model changed over time?
- Does the model account for variations in design, maintenance and multiple use? (is design: gravity flow, pumped or mound?)
- Did the model consider septic tank age (construction date) and pre-existing lack of 3-5 year maintenance requirement?
- Does the model consider that mounding may occur where many septic systems are built close to one another?
- Does it use differential water use tables?
- How are minimum and maximum N-loading estimated?

What data are available on septic systems?

- Are water use data available that reflect census data with respect to: urban vs. rural use, family size, working families vs. families at home, age of residents, households using public (not well) water, and communal above ground systems? Has anyone tried to correlate effluent amount as affected by water use?
- Are data available on soil permeability, and if so is it useful for study of septic tank loading of nutrients?
- Are data available on the use of rural alternatives (pipes, cesspools, sink holes) in your state? Is the number important enough to use?
- Are data available on septic system nos. and construction dates?



page 2 questionnaire

What are the regulations which affect septic tank design, maintenance, and use?

- Does your state require an update on septic systems where areas are converted from "recreational" use to "residential" use?
- in MD, VA, and Delaware: How is your state dealing with septic fields on the Delmarva Peninsula?
- Do your state regulations vary by physiographic region? by county?
- What does your state require for a septic system permit? What is the approval process (try to assess how stringent it is)?
- Can you share any written documents with data, regulations and model information, any bibliographies on the subject, and any contacts in the CBW region, or outside of it, that are doing work - or are knowledgeable on septic systems?

*Thank you*

## Contact List

| Name and Title   | Organization/address   | phone/fax   | notes  |
|--|--|---|--|
| Ross Mandel  | Interstate Commission for<br>Potomac River Basin<br>Rockville, MD  | 301 984-1908<br>ext 119 OR<br>at home: 202 244-<br>5368 |  |
| Mike Sevenser<br>Principal Water<br>Resource Engineer  | Washington Suburban Sanitary<br>Commission (WSSC)  | 301 206-8084  |  |
| Tanya Spano<br>Senior Env't Engineer   | Metropolitan Water Commission<br><br>National Agricultural Libr<br>attn Janet Dombrowski,<br>Water Quality<br>open 8 am-4 pm | 301 504-5755  | D. Tamascos's sister   |
| Judy Denver<br>Geochemist  | USGS<br>Dover, DE  | 302 573-6241  |  |
| Rick Green<br>Water Quality<br>Assessment Branch   | DNREC<br>PO Box 1401<br>89 Kings Highway<br>Dover, DE 19903  | 302 439-4590  |  |
| Pbde Hamilton  | USGS   | 804 826-1535  | worked on NAQWA Delmarva study                                       |
| Dr. William Ritter<br>Professor<br>Agricultural Engineering<br>Dept                                    | University of Delaware<br>Dover, DE  | 302 831-2468  |  |
| Rodney Wyatt,<br>Section Manager<br>Ground Water Discharge<br>Unit, Water Res Div                      | DNREC<br>PO Box 1401<br>89 Kings Highway<br>Dover, DE 19903  | 302 739-4761  | He issues septic System permits.                                     |
| Maureen Cook   | The Pinelands Commission<br>PO Box 7<br>New Lisbon, NJ 08064   | 609 894-9342  | referred by Robert Zarpella of TPC send<br>\$36 for rpt and diskette |
| Ed Eichner<br>Resource Protection<br>Program   | Cape Cod Commission<br>3225 Main Street<br>PO Box 226<br>Barnstable, MA 02630  | 508 362-3828  |  |
| Art Gold<br>Professor  | University of Rhode Island<br>336 Woodward Hall<br>Kingston, RI 02881  | 401 792-2903  |  |
| Douglas Haith<br>Professor   | Cornell University<br>Agriculture and Biological<br>Engineering<br>308 Riley Robb Hall<br>Ithaca, NY                         | 607 255-2802  |  |
| George Heuselder   | Barnstable Health Dept<br>Massachusetts  | 508 362-2511  |  |
| Michael G. Heyl, MS<br>Principal Scientist   | Camp Dresser & McKee Inc.<br>201 Montgomery Avenue<br>Sarasota, FL 34243   | 813 351 - 7100<br>fax: 355-5311                         |  |
| Anish Jantrania, Phd<br>In-House Consulting<br>Engineer for Gloucester<br>Onsite Project               |  | 508 281-9773  | see Small Flows Clearing House, West<br>Virginia                     |
| Jim Kaap<br>Water Quality<br>Specialist  | Soil Conservation Service<br>6515 Watts Rd Suite 200<br>Madison, Wisc 53719-2726   | 608-264-5341  | sent NLEAP paper   |
| Karen Mandl  | Agricultural Engin Dept<br>Ohio State University   | 614 292-OHIO  | kmandl@magnus.acs.ohiostate.edu                                      |
| Gerold Morrison, Phd<br>Environmental Scientist<br>Surface Water<br>Improvement and<br>Management Dept | Southwest Florida Managemt<br>District<br>7601 Highway 301 North<br>Tampa, FL 33637  | 813 965-7461  |  |
| Joe Neafsey<br>Water Quality Specialist  | State Office in Storrs, CT   | 203 487-4017  |  |
| Dick Otis, Author<br>of the EPA Onsite<br>Wastewater Sewage  | Ayers Assoc<br>Madison, Wisc   |   | not contacted for this project                                       |

### Contact List

| Name and Title  | Organization/address  | phone/fax   | notes   |
|---|---|---|---|
| <b>Disposal System Design Manual</b>  |   |   |   |
| Scott Stevens, Project Manager for 2nd eval of ss and sludge for Tampa Bay                                      | Airs & Assoc  | 813 985-7481<br>(or 813 628-0742<br>Mark Flint, Proj Mgr) | He did GIS Component of Project.  |
| Hans Zarbock  | Coastal Environmental Consulting  | 813 985-7481  | Charlotte Harbor watershed diagnostic assessment  |
| Kathy Baird   | Virginia Dept of Health   | 804 748-1610  | maintenance efforts Chesterfield County   |
| Daryl Glover/ Shawn Smith   | Chesapeake Bay Local Assistance Department (CBLAD)<br>Richmond, VA                                  | 804 225-3440  |   |
| Bob Harrell   | Center for Innovative Techn<br>Tidewater Community College<br>Chesapeake Campus, VA                 | 804 549-5241  | didn't speak with him   |
| Alan Knapp  | Virginia Dept of Health   | 804 786-1750  | "N loss is site specific and varies with soils"   |
| Ken Lanfuir   | Virginia Water Resources Department   | 703 648-6693  | never spoke with him  |
| Raymond Reneau Professor  | Virginia Polytechnic Institute and State College<br>339 Smyth Hall<br>Blacksburg, VA                | 703 231-9779<br>fax: 231-3431                             | read about denitrification  |
| Jack Anderson   | Baltimore Metropolitan Council/Reservoir Tech Grp<br>601 North Howard Street<br>Baltimore, MD 21201 | 410 333-1750 x217<br>fax: 659-1260                        | Reservoir Tech Group has included septic systems as topic for discussion at recent meeting. |
| Jane Gottfredson<br>Septic/Wells Program<br>( & Jay Prager,<br>Alternative/Innovative<br>Onsite Sewage Disposal | MD Dept of Environment<br>Residential Sanitation Division<br>2500 Boering Hwy,<br>Baltimore, MD     | 410 631-3779  |   |
| Jim Hannebold<br>Agronomist   | Chesapeake Bay Program  | 410 267-5751<br>(fax) 267-5771                            |   |
| Tom Miller, Cooperative<br>Extension Agent  | Maryland Cooperative Ext.<br>Agency, Keedysville, MD  | 301 432-7172<br>301 791-1404                              |   |
| Jeff Moffatt  | Alliance for the Chesapeake Bay   | 410 377-6270  |   |
| Mike Permenter<br>Chesapeake Bay<br>Program Coordinator   | USDA, Natural Resources<br>Conservation Service<br>Centreville, MD                                  | 410 757-0861  |   |
| Robert Shedlock<br>Hydrologist  | USGS<br>208 Carroll Bldg<br>8600 LaSalle Rd<br>Towson, MD 21286                                     | 410 512-4837  | Joel Dysart to send information.  |
| Ed Singer   | Carroll County Health Dept<br>Environmental Health Division,<br>Maryland                            | 410 876-2152  |   |
| Bob Sommers   | MD Dept of Environment<br>2500 Boering Hwy,<br>Baltimore, MD  | 410 631-3680  |   |
| Tom Tapley  | MDE/Chesapeake Bay<br>Watershed Protection Program  | 410 631-3902  | has done modelling of septic system   |
| Debbie Weller,  | Maryland Office of Planning<br>301 West Preston, 11th fl<br>Baltimore, MD                           | 410 225-4500  | Watershed Planning Modelling  |
| Tom Ivari   | USD/NRCS-NNTC<br>160 E. 7th Street<br>Chester, PA 19013   | 610 490-6062<br>fax: 610-490-6009                         |   |
| Milton Lauch, Chief<br>On-Lot Systems and<br>Alternative Technology   | PA Dept Env't Resources<br>Bureau of Water Quality Mgmt<br>Lancaster County, PA                     | 717 787-3481  |   |
| Steve Carpenter   | Natural Resource Conservation<br>Service<br>Morgantown, West VA                                     | 304 291-4151  | modeled seepage from sept sys & built GIS Jefferson Co.                                     |
| Phil Jones  | West Virginia Health and<br>Human Services<br>Regulations and Stnds                                 | 304 558-23981   |   |
| Nancy Gover   | National Small Flows  | 1-800-624-8301  | see Small Flows articles on the National  |

Contact List

| Name and Title      | Organization/address  | phone/fax    | notes                        |
|---------------------|---|--------------|------------------------------|
| Editor, Small Flows | Clearinghouse<br>West Virginia University<br>PO Box 6064<br>Morgantown, WV 26506-6064 |              | Onsite Demonstration Project |
| David Watkins       | Dept of Envt Protection<br>HHS  | 304 558-2108 | Permit Issuance              |

William Donald Schaefer  
Governor

David A.C. Carroll  
Secretary

MEMORANDUM

TO: Health Officers and Directors of Environmental Health

FROM: *J. L. Hearn*  
J. L. Hearn, Director  
Water Management Administration

SUBJECT: Alternative Onsite Sewage Disposal Systems

DATE: SEP 28 1994

Maryland Department of the Environment (MDE) currently recognizes two categories of on-site sewage disposal system: conventional and non-conventional. Conventional on-site sewage disposal systems are those systems that meet current regulations. All non-conventional systems, also referred to as innovative and alternative (I/A) systems, are considered experimental and since June of 1991 their use has been restricted to existing developed sites that have no indoor plumbing or are served by a failing sewage disposal system. Within the Department, the Individual Septic Systems and Wells Program (ISSWP) evaluates I/A technologies to determine when and if they can be converted to conventional use.

Based on ISSWP experience with certain I/A technologies, as well as the available literature, we are now establishing an *alternative* category of technology, transitional between non-conventional and conventional technologies. This *alternative* category will permit the most promising experimental technologies to be installed on existing lots of record within the confines of the Innovative and Alternative Septic System Program. The establishment of an alternative systems category will provide local health departments the opportunity to gain experience with new technologies prior to their conversion to conventional use.

The Department recognizes that approval and installation of these systems requires more intensive site evaluation and increased inspection than most conventional systems. Also, it is understood that manpower levels differ among counties. Therefore, counties may vary in the extent to which they will be able to apply the *alternative* category to undeveloped properties. The ISSWP will assist counties in evaluating potential sites, to the extent manpower resources are available. As always, solving existing health hazards remains a priority use of manpower and resources.

The conditions for approving *alternative* systems are as follows:

1. The primary responsibility for providing manpower for the approval of *alternative* systems will rest with the counties. MDE personnel will assist when possible, or as otherwise required.



2. The site evaluation for each applicant should include the following:
- A. Soil classification from USDA Soil Survey;
  - B. Depth to groundwater and/or bedrock;
  - C. Appropriate soil percolation rates, infiltrometer rates, or hydraulic conductivity measurements;
  - D. Detailed USDA soil profile descriptions;
  - E. Topography and surface drainage information; and
  - F. Technology proposed.
3. A copy of the site evaluation and plans should be submitted to the ISSWP. ISSWP should be notified 48 hours prior to the start of construction.
4. New construction is permitted only for existing lots of record.
5. New construction is not grant eligible.
6. ISSWP will provide generalized design specifications for alternative technologies. The following systems will comprise the *alternative* category:

| SYSTEM                            | RATE (min/in) |
|-----------------------------------|---------------|
| At-grade mound                    | 2 - 60        |
| Sand mound                        | 60 - 120      |
| Enhanced pretreatment             | 30 - 60       |
| Waterless Toilet/Graywater        | 30 - 60       |
| Shallow Low Pressure Distribution | 30 - 60       |
| Shallow Alternating Trench        | 30 - 60       |

7. An Agreement and Easement must be signed by all parties, recorded in the land records and returned to the local Approving Authority. The Agreement and Easement establishes the regulatory conditions associated with the experimental project and provides monitoring access for State and County personnel.

The use of alternative technologies will not change the requirements for set-back distances, recovery areas or unsaturated treatment zones.

It is the hope of the Department that the *alternative* category will lead to a greater number of installations using alternative technologies, while providing the opportunity for county personnel and contractors to familiarize themselves with the technologies before they become conventional. In most instances, the protection of ground water will be enhanced with the use of alternative systems.

If you have any questions or comments please feel free to contact Jay Prager, at (410) 631-3779.

JLH:je

## ALTERNATIVE ONSITE SEWAGE DISPOSAL SYSTEMS

In accordance with the attached memorandum the following technologies may be used as alternative systems for new construction on existing lots of record. Onsite sewage disposal technologies were selected that we believe will hydraulically function while reducing the load of nutrients from septic systems to ground and surface waters. These systems require maintenance that may need to be performed on a regular basis. Property owners should be required to maintain a maintenance contract for the life of the system.

### At-Grade Mound

Based on THE WISCONSIN AT-GRADE SOIL ABSORPTION SYSTEM FOR SEPTIC TANK EFFLUENT by Converse, Tyler, and Peterson. This is basically a pressure dosed elevated bed system. The system is designed and constructed similar to a sand mound, but no sand is used. The bed is placed directly on the surface of the ground which has been plowed. The use of a roto-tiller is not permitted. Leaching chambers such as the Infiltrator® may be used. Particular care must be taken not to disturb the plowed area. Unlike a sand mound there is no sand placed on the plowed surface to protect it from compaction. Also, the initial and recovery sewage disposal areas must be protected from compaction before, during, and after construction.

Permeability - 2 to 60 minutes per inch in the most restrictive horizon in the top 30 inches of soil as measured in an infiltrometer.

| Vertical Permeability (min/in) | Design Loading Rate (gpd/ft <sup>2</sup> ) |
|--------------------------------|--|
| 2 to 15                        | 0.8  |
| 16 to 30                       | 0.6  |
| 31 to 60                       | 0.4  |

Linear Loading Rate (gpd/ft of bed length) -  $\leq 9$ .

The effective absorption area is that area in the gravel or leaching chamber directly down gradient from the distribution pipe. The system should be designed to maximize the length of the bed perpendicular to the slope. Accurate as-builts are necessary so that the ends of the distribution laterals can be recovered for future maintenance. Lateral turn-ups should be cut off at grade and/or shielded to protect from breakage. We have consistently had turn-ups broken by lawn mowers. See the State of Maryland DESIGN AND CONSTRUCTION MANUAL FOR SAND MOUND SYSTEMS for the design of a pressure distribution system.

## Sand Mound

Sand mounds in permeable soil have been conventionally used in Maryland since 1985. Sand mounds with vertical permeability slower than 60 minutes per inch have remained non-conventional. The Department has been monitoring over twenty sand mounds with vertical permeability rates between 60 and 120 minutes per inch. None of these systems have experienced seepage of effluent to the ground surface. Our experience with sand mounds (both conventional and > 120 min/in) indicates that landscape position and surface drainage are frequently indicated as factors in failing systems. In addition, the initial and recovery sewage disposal areas must be protected from compaction before, during, and after construction.

Permeability - 60 to 120 minutes per inch in the most restrictive horizon in the top 30 inches of soil as measured in an infiltrometer.

Design Loading Rate (gpd/ft<sup>2</sup>) - 0.25

Linear Loading Rate (gpd/ft of bed length) - ≤ 6

The effective absorption area is that area directly beneath and down gradient of the absorption bed. The system should be designed to maximize the length of the bed perpendicular to the slope. Accurate as-builts are necessary so that the ends of the distribution laterals can be recovered for future maintenance. Lateral turn-ups should be cut off at grade and/or shielded to protect from breakage. We have consistently had turn-ups broken by lawn mowers. See the State of Maryland DESIGN AND CONSTRUCTION MANUAL FOR SAND MOUND SYSTEMS for additional information.

## Enhanced Pretreatment/Nitrogen Reduction

We are considering two means of enhanced pretreatment for the alternative category: recirculating sand filters and NSF approved individual home aerobic wastewater treatment plants. We are also interested in constructed wetlands, but because of limited experience have yet to gain confidence in this technology.

### Recirculating Sand Filters

We recommend a design loading rate of 5 gpd/ft<sup>2</sup> forward flow with sand that has an effective size approximately between 0.9 and 1.0 mm. Enclosed is a sample design for a recirculating sand filter. The recirculating sand filter can discharge to a gravity trench system.

Permeability - 30 to 60 min/in in a standard percolation test as measured at the depth the trench is to be installed.

Design Loading Rate (trench) - 0.5 gpd/ft<sup>2</sup>

### Individual Home Aerobic Waste Water Treatment Plants

We recommend using NSF approved units. Service contracts and warranties should be available through the dealer or installer. An advantage to these systems is that service contracts and guarantees are available. The disadvantage is that should a company go out of business, service and parts may become unavailable. Systems should be selected that can reduce nitrogen levels typically found in septic tank effluent. Before a permit is issued, a performance standard should be established for the system.

Permeability - 30 to 60 min/in in a standard percolation test as measured at the depth the trench is to be installed.

Design Loading Rate - 0.5 gpd/ft<sup>2</sup>

### Waterless Toilet/Graywater

We recommend using only NSF approved units. Service contracts and warranties should be available through the dealer or installer. Waterless toilets, sometimes referred to as compost systems, require a higher level of homeowner maintenance than other technologies. Even though the Maryland Annotated Code allows for waterless toilets, certain issues have not been resolved. We have not addressed whether the end product should be addressed as septage, compost, sludge or something else such as soil conditioner. We have also not addressed who determines when the end product could be removed from the unit and who makes that determination. Prospective users of this technology should present a plan for the maintenance of the system and disposal of the end product. Please find attached, a copy of MDE's Guidance on Water Toilet Systems and the law permitting their use.

Permeability - 30 to 60 min/in as measured at the depth the trench is to be installed in a standard percolation test.

Design Loading Rate - 0.5 gpd/ft<sup>2</sup>

### Shallow Low Pressure Distribution

Maximum trench depth = 3 ft

Permeability - 30 to 60 min/in in a standard percolation test as measured at the depth the trench is to be installed. <120 min/in in the 24 inches of soil beneath the trench bottom.

Design Loading Rate - 0.4 gpd/ft<sup>2</sup> (bottom area only)

See the State of Maryland DESIGN AND CONSTRUCTION MANUAL FOR SAND MOUND SYSTEMS for the design of a pressure distribution system. On sloping sites the perforation spacing must be varied to equalize the flow between trenches. The flow should be equalized to within 10% for any 2 perforations and 10% for any two laterals. Accurate as-builts are necessary so that the ends of the distribution laterals can be recovered for future maintenance. Lateral turn-ups should be cut off at grade and/or shielded to protect from breakage. We have consistently had turn-ups broken by lawn mowers.

### Shallow Alternating Trench

Maximum trench depth = 3 ft

Permeability - 30 to 60 min/in in a standard percolation test as measured at the depth the trench is to be installed. <120 min/in in the 24 inches of soil beneath the trench bottom.

Design Loading Rate - 0.27 gpd/ft<sup>2</sup> (bottom area only)

This is a low technology gravity fed system. The system should be valved such that only 50% of the system is used at any given time. The valve should be switched once a year; however, should this be neglected and one side of the system run until failure, the valve provides for a built-in repair. Using a 0.27 gpd/ft<sup>2</sup> loading rate provides for a 150% installation. We recommend that sufficient sewage disposal recovery area be provided for a minimum of two complete 150% installations.

## RESERVOIR TECHNICAL GROUP

Notice of Meeting

Thursday, April 13, 1995

1:30 to 3:00 p.m.

Baltimore Metropolitan Council

601 North Howard Street

Baltimore, MD 21201

### AGENDA

#### FOCUS ON SEPTIC SYSTEM ISSUES

The Action Strategy includes a number of items related to septic tank maintenance, correction of failing systems, etc. The Chesapeake Bay Program is sponsoring a Bay-watershed wide analysis by NCRI of potential loads from septic systems. Our 1994 Public Awareness Survey provided added insight into the prevalence of septic systems and maintenance practices. In responding to a number of questions, BMC has done some recent work in pinpointing the location and extent of septic systems. Today we will highlight a number of these efforts.

#### COMPLETING THE 1994 ACTION REPORT AND PREPARING FOR UPCOMING MEETING OF THE RESERVOIR WATERSHED PROTECTION SUBCOMMITTEE

Baltimore and Carroll County have made the following appointments to the Subcommittee: Councilman McIntire (Baltimore County) and Commissioner Brown (Carroll County). A Subcommittee meeting has been scheduled for Thursday, April 27, 9:30 to 11:30 at BMC. We need to finalize our draft 1994 Action Report. Today we will focus on a revised draft of the Executive Summary.

#### OTHER BUSINESS-- BRIEF PROGRESS REPORTS/STATUS HIGHLIGHTS

- o Public awareness efforts in support of the reservoir watershed program
  - Upcoming Spring 1995 Workshops-- progress report from our planning workgroup and Save Our Streams (see enclosed worksession reminder)
  - 1994 Public Awareness Survey-- distribution of report
  - Environmental Education Project w/ Baltimore and Carroll County Schools--
- o Brief Status Reports: Issues in the Watershed
- o Legislation from the 1995 General Assembly that affects the Reservoir Watershed Protection Program
- o Coordination with related state/local watershed efforts-- trib strategies, local watershed efforts, NPDES, "Friends of the Watershed," etc.
- o GIS and Modeling issues-- progress on preparing Landsat basemap

**WORKSHOP PLANNING GROUP**  
Save Our Streams/Reservoir Watershed Protection Program

Meeting Reminder  
**Thursday, April 13, 1995**  
Noon to 1:30 p.m.  
Baltimore Metropolitan Council  
601 North Howard Street  
Baltimore, MD 21201

This worksession will precede our usual Reservoir Technical Group meeting.

**Lunch will be provided.**

This is another in our series of Workshop planning sessions. SOS incorporated the editing suggestions made at our last meeting in the brochure/announcement. Copies of the printed brochure will be available at today's meeting. SOS has been working with BMC, county reps and others to finalize plans for publicity and distribution. SOS will begin publicizing the workshops next week.

Remember the dates and places:

- |                   |  |
|-------------------|--|
| Saturday, May 13  | Carroll Community College<br>Liberty Reservoir Watershed focus     |
| Saturday, June 10 | Prettyboy Elementary School<br>Prettyboy Reservoir Watershed focus |
| Saturday, June 17 | Oregon Ridge Nature Center<br>Loch Raven Reservoir Watershed focus |

Today we will review our progress and continue planning-- fine-tune the workshop schedule and names of presenters and their responsibilities, work on other workshop logistics, and review and approve a concept and format for a pocket-sized "personal action plan" for reservoir watershed protection.

## RESERVOIR TECHNICAL GROUP

Meeting  
of  
March 9, 1994  
1:30 to 3:00 p.m.  
Baltimore Metropolitan Council  
601 North Howard Street  
Baltimore, MD 21201

Minutes  
\*\*\*\*\*

### Present

#### Participating Organizations

Rowland Agdebe, MDA  
Patricia Bernhardt, Harford County  
Shern Garrison, MDE, Chesapeake Bay and Watershed Administration  
John Grace, MDE, Public Drinking Water Program  
Ed Null, Carroll SCD  
Cathy Rappe, Carroll County  
Bill Stack, Baltimore City  
Jack Anderson, Baltimore Metropolitan Council

### Guests

Joe Tassone, Maryland Office of Planning  
Barbara Weidman, Director, Business & Education Training, Essex Community College  
Rebecca Pitt, Save Our Streams  
Susie Wong, Save Our Streams  
Polly Wirth, Save Our Streams  
Pat Lane, Coalition for Watershed Protection

### Lessons learned in the Patuxent Demonstration Project

Joe Tassone, Maryland Office Planning, gave a presentation on findings resulting from the Patuxent Demonstration Project relative to land use/growth management as tools for helping control nonpoint source pollution. He distributed two handouts: (1) an outline of the project's purpose, key finding, background, history, components, project status, highlights of modeling results, and graph descriptions; and (2) copies of selected graphs displaying results.

After reviewing the background of the Project, Mr. Tassone summarized the watershed planning system used in the analysis, referring to a flow chart showing components of the system. He then summarized each chart, discussing the implications for nonpoint source control. The analysis focused on the years 1990 and 2010. Referring to a summary chart, "Contribution of Management

"Tools to the 40% Nitrogen Reduction Goal," he pointed out that in 1990 the average annual nitrogen loads were already above the maximum limit or "cap" required to meet the Chesapeake Bay/tributary strategy's 40% reduction goal. By the year 2010, assuming no nonpoint controls or "no tools," nitrogen loads are projected to increase substantially. By applying "existing tools," loads will decrease slightly. By applying "enhanced tools," loads will decrease even more, but still not enough to attain the nitrogen goal or "cap."

Then Mr. Tassone focussed on the year 2010 and showed the estimated reduction in nitrogen load resulting from each of the following planning and management tools: clustering, forest conservation, development buffers, storm water management, agricultural BMPs, agricultural buffers, and limiting new development on septic systems. A summary chart, "Contribution of Management Tools to the 2010 NPS Nitrogen Reduction (Cap)," showed that, of the existing tools-- forest conservation resulted in the largest nitrogen reduction, followed by clustering, storm water management, agricultural buffers, and development buffers. Enhanced tools that were most effective in further reducing nitrogen loads were agricultural BMPs and limiting septic systems. Similar charts displayed results for the portion of each county within the Patuxent Watershed. The county-by-county results were similar to those for the entire watershed, varying mostly according to projected 2010 land use within each area.

Mr. Tassone emphasized the key finding, "Land management tools can play an important role in obtaining and maintaining the 40% nutrient reduction goal (cap), as well as furthering other resource and community goals."

Discussion focussed mostly on methodology and the concept of limiting septic systems. In response to a question on methodology, Mr. Tassone referred the RTG to the 1993 Project Progress Report where methodology is fully documented. He said the Project is entering Phase II which is implementation oriented and will result in a watershed strategy for land use and NPS management.

In response to a number of questions about limiting septic systems, Mr. Tassone explained that this concept involved redirecting development into sewerred areas and away from areas requiring septic systems. The nitrogen reduction results from fewer septic systems. In response to a question about the capacity of planned sewerage systems and planned sewer service areas, Mr. Tassone said that the additional development can be accommodated on vacant land already planned for sewer service.

In conclusion, Mr. Tassone said the modeling system is now being applied in the Piney Alloway Targeted Watershed in Carroll County and in the Winters Run Watershed in Harford County. Work plans including using the system in conjunction with the Upper Western Shore tributary strategy team effort. Jack thanked Mr. Tassone on behalf of the Reservoir Technical Group.

Other business-- brief progress reports/status highlights



Coordination with related state/local watershed efforts. Sherm Garrison noted that the "Blue Ribbon Report" on financing options for implementing Chesapeake Bay Programs has been published. Jack reported that the "Friends of the Watershed" is establishing its organizational and committee structure.

GIS and Modeling issues. Cathy Rappe, Rob Ryan, Bill Stack and Jack Anderson met subsequent to the last RTG meeting and developed a collaborative approach for preparing a GIS-produced Landsat image map of the reservoir watersheds.

Next RTG meeting

The next regular meeting of the Reservoir Technical Group will be Thursday, April 13, 1995, 1:30 pm at BMC.

The next meeting of the Workshop Planning Group in collaboration with Save Our Streams will also be Thursday, April 13, 1995 at 12 noon, preceding the regular RTG meeting.

Respectfully submitted,  
Jack Anderson

Baltimore Metropolitan Council



601 North Howard Street  
Baltimore, Maryland 21201-4585

Telephone: (410) 333-1750  
Facsimile: (410) 659-1260

PAUL FARRAGUT  
Executive Director

Anne Arundel County  
Baltimore City  
Baltimore County  
Carroll County  
Harford County  
Howard County

April 7, 1995

TO: Members:  
Reservoir Watershed Protection Subcommittee

FR: Jack Anderson, Coordinator *[Signature]*  
Reservoir Watershed Protection Program

RE: Notice of Subcommittee meeting  
Thursday, April 27, 1995  
9:30 - 11:30 am, at Baltimore Metropolitan Council  
Update on citizen workshops

We want to welcome new Subcommittee members Ben Brown, member of the Carroll County Board of County Commissioners, and T. Bryan McIntire, member of the Baltimore County Council.

A meeting of the Subcommittee has been scheduled for Thursday, April 27, 1995 at BMC. The meeting will include a review of recent work by the Reservoir Watershed Protection Program, review and approval of the 1994 Action Report, and an update on related efforts such as the State's tributary strategy program.

The specific agenda and the draft 1994 Action Report will be mailed to you on April 13 at which time the Reservoir Technical Group will have completed its work on the draft.

One of the action strategies has always been to increase public awareness within the watersheds about the importance of reservoir watershed protection. In May and June three public workshops will be held on reservoir watershed protection co-sponsored by the Reservoir Watershed Protection Program.

The workshop schedule:

|                   |  |
|-------------------|--|
| Saturday, May 13  | Carroll Community College<br>Liberty Reservoir Watershed focus     |
| Saturday, June 10 | Prettyboy Elementary School<br>Prettyboy Reservoir Watershed focus |
| Saturday, June 17 | Oregon Ridge Nature Center<br>Loch Raven Reservoir Watershed focus |

**MENU OF PRACTICES  
TO IMPROVE PERFORMANCE OF SEPTIC SYSTEMS**

| PRACTICE                             | PURPOSE   | COST*                | EXPECTED N REDUCTION | REGIONAL MAGNITUDE |
|--------------------------------------|---|----------------------|----------------------|--------------------|
| Retrofit low flow fixtures           | Reduce flow to existing systems   | \$250 - \$500        | NA                   |                    |
| Ensure watertight septic tanks       | Eliminate infiltration and exfiltration                                 | \$0 - \$600          | NA                   |                    |
| Require 2 compartment septic tanks   | Improve solids separation and prevent discharge of solids to drainfield | \$200                | ?                    |                    |
| Require septic tank outlet filters   | Improve solids separation and prevent discharge of solids to drainfield | \$50 - \$150         | ?                    |                    |
| Mandatory pumpout of septic tanks    | Extend life of system   | \$50 - \$75 per year | ?                    |                    |
| Routine inspection of septic systems | Identify failing systems and maintenance needs                          |                      | ?                    |                    |
| Shallow systems                      | Take advantage of nutrient uptake                                       | negligible           | 20%                  |                    |
| Dosing systems                       | Promote aerobic degradation of organics, may prolong life of system     | \$0 - \$1,500        | 20%                  |                    |
| Pressure dosing systems              | Uniform distribution of effluent may improve treatment                  | \$2,000 - \$4,000    | 40% (if shallow)     |                    |
| Alternating systems                  | Prolong life of the system  | \$1,000              | ?                    |                    |
| Recirculating sandfilters            | Advanced pretreatment, denitrifies, may extend life of system           | \$5,000              | 60%                  |                    |

| PRACTICE                             | PURPOSE   | COST*              | EXPECTED N REDUCTION                               | REGIONAL MAGNITUDE |
|--------------------------------------|---|--------------------|--|--------------------|
| Other means of advanced pretreatment | Advanced pretreatment, denitrifies, may extend life of system   | \$4,000 - \$10,000 | 50% - 80%  |                    |
| Greywater segregation                | Permit irrigation or re-use of greywater, or a Ruck type denitrification system   | \$2,000 - \$10,000 | 50% (Ruck)   |                    |
| Sand mound systems                   | Advanced pre-treatment, use uppermost soil horizons   | \$6,000            | 50%  |                    |
| Sand fill trenches                   | Provide better medium than gravel to treat effluent   | \$2,000            | ?  |                    |
| At-grade systems                     | Use uppermost soil horizons   | \$3,000 - \$4,000  | 40%  |                    |
| Waterless toilets                    | Remove blackwater from waste stream   | \$5,000 - \$8,000  | 80% (depending on ultimate disposal of blackwater) |                    |
| Establish holding tank utilities     | Remove sewage to advanced treatment plants, eliminate failing systems   |                    | Depends on ultimate disposal treatment efficiency  |                    |
| Education                            | Inform home owners on proper maintenance and operation of septic systems, train regulators, consultants, and contractors on best management practices |                    | ?  |                    |

\*Over the cost of a traditional septic system.

## SEPTIC SYSTEM BEST AVAILABLE TECHNOLOGIES

Since the 1950's, sanitary engineers have recognized that the conventional septic tank/soil absorption system can be improved so that hydraulic failures are reduced and the overall treatment efficiency is heightened. Some of the more common modifications to the conventional system include:

- Double compartment septic tanks
- Dosing siphon
- Outlet tee filter
- Alternating drainfields
- Shallow absorption field
- Pressurized distribution system

Much work has also been accomplished with respect to waste flow reduction and modification, including use of low flow fixtures, elimination of garbage disposals, and separation of "gray" water from "black" water. Low flow fixtures are generally mandated by updated plumbing codes. Gray water can be treated and reused for toilet flushing or exterior landscape irrigation. Gray water recycling reduces overall water consumption and leads to improved on-site system performance by reducing hydraulic loading to both major components of the system, the septic tank and the drainfield. Gray water separation is not generally practiced in Maryland due to our relative abundance of water resources, and the absence of plumbing code guidance to ensure proper installation of the systems.

More advanced modifications of the septic tank/soil absorption system have been implemented to address site specific needs such as high groundwater levels, low soil permeability, and reduction of nitrate or phosphate nutrient loading. These types of modifications include, but are not limited to:

- Evapotranspiration beds
- Mound system
- Intermittent or recirculating sand filters
- Denitrifying sand filters
- Alum dosing

Certain site evaluation and management techniques are considered to greatly reduce the chances of failure and extend drainfield life. Since construction of the soil absorption system is a major cost item, extended life means a lower life cycle cost for the homeowner. Improved management techniques include regular inspection of the septic tank and drain field, aided by provision of inspection pipes during system construction or mandatory pump out of the accumulated septic tank solids at 2 or 3 year intervals.

Following are brief descriptions of the septic tank/soil absorption field modifications mentioned above, and a preliminary assessment of their possible applicability within the Patuxent Reservoirs' watershed.

### Double Compartment Septic Tanks

The septic tank in a conventional system serves to physically separate large settleable solids and floatable materials from the liquid effluent. In addition, biological processes lead to the anaerobic digestion of the settled sludge. The purpose of this initial separation of solids from the septic tank effluent is to prevent clogging of the soil absorption field that occurs very rapidly when solids or grease are present in the effluent. The double compartment septic tank provides for a more efficient separation of solids (both settleable and floatable) from the liquid effluent through its improved hydraulic characteristics without increasing tank size. The double compartment septic tank may be expected to cost only slightly more than the standard single compartment tank. An additional benefit is that the internal baffle wall improves the mechanical strength of the tank, helping avoid cracks that may either admit groundwater to the system, or leak incompletely treated effluent to the groundwater. The modification is considered widely applicable and especially so in sensitive areas where the consequences of system failure are important.

### Dosing Siphon

The soil absorption field is a major component of the on-site wastewater treatment system. When the treatment system functions properly, contaminants are removed from wastewater through a combination of physical, chemical and biological processes. Of course, the soil media removes solids, including some of the larger microorganisms, by a filtering action as the liquid effluent flows through the pores of a fine grained soil. Less obvious are the chemical and biological interactions between the soil and the applied wastewater.

The movement of viruses, phosphorus and synthetic organic substances through the soil is limited by the chemical adsorption and biological degradation processes that depend on aerobic soil conditions to be most effective. The dosing siphon helps to maintain aerobic conditions by allowing the soil to "rest" between dosing cycles, thereby preventing the continuously saturated conditions which lead to an anaerobic environment. The siphon itself is a simple pipe or elbow with an airtight bell arranged so that flow out of the dosing chamber only starts when a certain overflow elevation is reached. The flow continues until the siphon is broken as the liquid level drops below the lip of the bell. Then, all flow out to the drain field stops until the dosing chamber fills again. The siphon has no moving parts and thus is very reliable and inexpensive, although a separate septic tank compartment or dosing chamber must be provided to exclude grease or floatable solids. The alternating wetting and drying of the soil absorption field provides a number of benefits including:

- Encouragement of aerobic conditions with increased biodegradation rates
- Increased microorganism die off

In addition dosing can be expected to extend drainfield life, though not indefinitely as might be expected with the alternating drainfields discussed later. The dosing siphon is widely applicable to improve on-site system performance on many different soil types, and duplex siphons are available for use with alternating drain fields.



### Evapotranspiration Beds

Evapotranspiration beds for effluent disposal ensure a "zero discharge" to minimize impact to groundwater. The evapotranspiration bed is built much like a shallow soil absorption system except that an impermeable liner prevents effluent from seeping away. Water is taken up by plants and evaporated from the bed at a rate greater than the hydraulic loading rate. While the beds are very effective at eliminating adverse impacts to groundwater, they are of limited life, since salinity will build up and eventually exceed the plant tolerance level. The application of evapotranspiration beds is limited to those areas with a net positive evapotranspiration coefficient, that is, water losses exceed the gains from precipitation.

### Mound System

In areas where high groundwater or shallow bedrock limit the proper functioning of the soil absorption system, mound systems have successfully restored the on-site wastewater treatment system. The drainfield is constructed above the existing grade by first plowing or otherwise breaking up the native soil surface horizon and then building the drainfield with layers of permeable materials such as fine sands. The distribution pipes are generally laid in gravel and then the mound is covered with a less permeable cap to shed precipitation and a layer of top soil to support vegetative growth. The mound system will improve performance of the soil absorption field where it might otherwise be limited by inadequate distance to groundwater, or bedrock, but does not improve performance over that of a conventional system with an adequate thickness of unsaturated soil. Thus, the mound system may be considered as capable of overcoming site limitations, but not improving system performance.

### Intermittent or Recirculating Sand Filters

The intermittent or recirculating sand filters are generally loaded at low rates, equivalent to those of the slow sand filters first used for wastewater treatment in the 19th century. Treatment occurs through a combination of physical, chemical and biological processes under aerobic conditions. The process is often applied to polish effluents from aerobic treatment units or lagoons prior to a surface water discharge. At a minimum, removal of grease, floatable solids and settleable solids such as might occur in a well designed double compartment septic tank will help to prevent premature clogging of the sand filter and therefore minimize maintenance requirements. Since the process is aerobic, the sand filter effluents are generally well nitrified and a certain amount of phosphorus removal can also be expected, although this may be limited by the media absorptive characteristics. A two log (99%) reduction of coliforms is typical for this system. If a sand filter is used before a subsurface discharge to a soil absorption system, clogging problems and anaerobic conditions in the drainfield can be greatly decreased, and overall improvement of effluent quality would be expected. Improved effluent quality would allow a reduction to the drainfield size. The sand filter can be added to any septic tank/soil absorption system regardless of soil types, but may require pumping if available hydraulic head is limited.

### Denitrifying Sand Filters

An innovative variation of the recirculating sand filter has been utilized where nitrate contamination is a concern, as for example where drinking water wells extract water from an unconfined aquifer into which on-site wastewater treatment systems discharge effluent. The denitrifying sand filter recirculates the nitrified sand filter effluent to the septic tank where nitrate is reduced to nitrogen gas under anoxic conditions. The process is analogous to current BNR practices at centralized wastewater treatment plants, but does not require sophisticated instrumentation or controls to achieve a high degree of nitrogen removal. With proper media selection considerable phosphorus removal can also be achieved. The sand filter effluent would generally be discharged to a subsurface drainfield where the treatment process is completed. Advantages as noted previously for the intermittent or recirculating sand filter with respect to extending drainfield life and treatment capacity also apply to the denitrifying sand filter. The system does require a pump and simple float-switch or timer based controls. The chances of failure (either hydraulic or inadequate treatment) are greatly reduced. This system would be widely applicable to those areas where on-site water and wastewater systems are required, or where there is a desire to provide additional removal of nutrients and pathogenic organisms.

### Alum Dosing

Alum dosing has been used as a means of reducing the phosphorus concentration in septic tank effluents. The improved sedimentation also yields an effluent with reduced solids and microorganism concentrations. Generally, dosing would be triggered by toilet flushing since it is presumed that phosphate based detergents would not be used, and therefore, household black waters would be the major source of phosphorus. A simple dosing system which injects a predetermined quantity of alum solution to the household drain line has been found effective to reduce phosphorus concentrations up to 90%. A major disadvantage is that sludge production is increased considerably and requires more frequent pumping of the septic tank. This system also requires considerable homeowner attention to the liquid alum chemical supply. Although the technology is widely applicable regardless of particular site conditions, it is probably not very practical to expect the high level of homeowner participation required.

### Improved Site Evaluation Techniques

The Montgomery County Health Department (MCHD) has developed improved procedures for granting septic system permits and inspection of site specific conditions during construction. These include:

- Review of proposed drainfield locations.
- Soil evaluation by a minimum of two perc tests at each proposed drainfield location.
- Evaluation of depth to bedrock or seasonal high water table.
- Increased available drainfield area in the Patuxent watershed.
- Consideration of overall density and possible impacts on groundwater nitrate concentrations.
- Requirements for further hydrogeological study to enhance or support the use of septic systems (on a case by case basis)
- Inspection of septic tank setting and inspection of drainfield construction prior to closure.

These procedures have undoubtedly had a positive effect on the reduction of

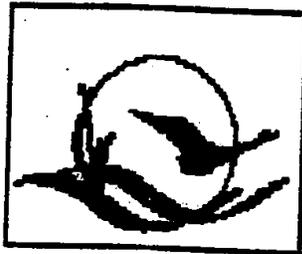
septic system hydraulic failure, and continue to be applicable within the Patuxent watershed.

#### Drainfield Inspection Pipe

During construction of the soil absorption system, it is a relatively simple matter to provide one or several points of inspection to allow observation of the drainfield. This can be a simple pipe inserted to the drainfield gravel layer and terminated slightly above grade with a cap. The pipe itself does not improve system performance but does allow observation of ponding conditions or high groundwater conditions indicative of a failure that might otherwise go unnoticed. The presence of the inspection pipe will also serve as a reminder of the drainfield location so that it may be avoided by cars or heavy equipment.

#### Mandatory Septic Tank Maintenance

One of the leading causes of septic tank/soil absorption system failure is neglect of the need to remove accumulated sludge on a regular basis. Many homeowners are simply not aware of this need or forget, since it is only required once every three years on average. If sludge is allowed to accumulate to a level where it is carried out of the septic tank and into the drainfield, a rapid failure due to clogging can be expected. Drainfield replacement is expensive and may be entirely circumvented by homeowners who have been known to modify the septic tank discharge so that effluent is carried directly to drainage swales. In this case, raw sewage is directly discharged to surface waters. Mandatory maintenance contracts are an accepted means of reducing on-site system failure and probably lead to a net savings for homeowners since a single drainfield failure would certainly cost more than regular maintenance over the life of the dwelling. Mandatory maintenance contracts are required in the entire state of Virginia and also in many other sensitive watersheds, for example those associated with drinking water reservoirs.



**U.S. Environmental Protection Agency**  
**Chesapeake Bay Program Office**  
**410 Severn Avenue**  
**Annapolis, MD 21403**  
**1-800-YOUR BAY**  
**<http://www.epa.gov/r3chespk/>**